DADD Online Journal

Research to Practice

Focusing on individuals with
autism, intellectual disability and other developmental disabilities

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The ***DADD Online Journal*** integrates research and practice, reflecting the need for evidence-based and practice informed strategies and interventions within this diverse field. Topics include: Autism Spectrum Disorder, Assistive & Adaptive Technology, Early Childhood, Intellectual Disability, Mental Health, Multiple Disabilities, Paraprofessionals, Employment, Post-Secondary, and Transitions.

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Division on Autism and Developmental Disabilities

Council for Exceptional Children

The purposes of this organization shall be to advance the education and welfare of persons with autism and developmental disabilities, research in the education of persons with autism and developmental disabilities, competency of educators in this field, public understanding of autism and developmental disabilities, and legislation needed to help accomplish these goals. The Division shall encourage and promote professional growth, research, and the dissemination and utilization of research findings.

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Research Informed Practice in Autism, Intellectual Disability, and Developmental Disabilities

Stanley H. Zucker
Arizona State University

Esther R. Lindström
Lehigh University

Melissa N. Savage
University of North Texas

Peggy J. Schaefer-Whitby
University of Arkansas

On January 26 – 28, 2022, the Council for Exceptional Children Division on Autism and Developmental Disabilities (DADD) sponsored its Twenty-third International Conference: Research Informed Practice in Autism, Intellectual Disability and Developmental Disabilities. The conference was held at the Sheraton Sand Key Resort in Clearwater, Florida. The DADD Board of Directors decided to devote this issue of the *DADD Online Journal* to conference papers. The conference brought together educators from school and college classrooms from all over the world. The conference included pre-conference training institutes and strands on assistive and adaptive technology, autism spectrum disorder, intellectual disability, mental health, paraprofessionals, parental engagement, post-secondary transitions, multiple disabilities and applied behavior analysis. The conference provided many parents, teacher educators, researchers, teachers, and other practitioners an opportunity to gather to learn the most current information related to providing services for individuals with autism, intellectual disability, and developmental disabilities.

This issue of the *DADD Online Journal* can enable those who attended the conference to see expanded papers, prepared by presenters, and also give those who were unable to attend an opportunity to benefit from the thoughtful work done by conference participants. Presenters were asked to submit papers based on their conference presentations. Papers submitted went under a blind review process by the Guest Reviewers who selected the papers for publication. We think the selection of papers represents an interesting assortment of topics and formats ranging from discussion papers to data based research to descriptions of classroom techniques. The papers selected do not necessarily represent all the topics covered at the conference but they do give a good idea of the variety and quality of the presentations. We would like to thank those authors who submitted papers for their efforts in making this issue of the *DADD Online Journal* possible.

In "Diversity, Equity, and Inclusion in Children's Literature: A Content Analysis of 40 Books," Tina Taylor, Hailey Hardy, Camryn McComas, Meaghan McCollow, and Christine Scholma present a critical examination of representation in books nominated for the 2022 Dolly Gray Children's Literature Award, which recognizes children's books featuring individuals with developmental disabilities. The authors used a mixed methods approach to analyze the portrayal of 50 characters with disabilities across 40 stories nominated for the 2022 prize. Codes addressed attributes including relationships, setting, race, and exemplary practices. With their report, the

authors include guidance and materials for teachers to choose and evaluate children's and youth literature.

In their article "Examining Biases as Educators," authors Lynn Stansberry Brusnahan, Marcus Fuller, Elizabeth Harkins Monaco, and Martin Odima, Jr. address the importance of self-reflection by educators to create a supportive, safe, and culturally affirming classroom for students with disabilities and other identities. The authors provide an overview of how bias may manifest in classrooms and encourage educators to reflect on their own identities and biases—both implicit and explicit. They guide readers in self-reflection through a framework of questions designed to move from acknowledgment to investigation of systemic issues, to strategizing toward action. The authors present the cultural reciprocity model as a means to navigate and engage with hard conversations necessary to become more effective educators.

Job interviewing is an important step to obtaining employment. Some individuals may need targeted, systematic instruction to learn skills essential to interviewing successfully. Electronic literacy-based behavioral interventions have been used to support mastery of job interviewing skills. In the practitioner article, "Using Electronic Literacy-Based Behavioral Interventions to Teach Employability Skills to College Students with Intellectual and Developmental Disabilities", Kelly Kearney and Ayse Torres describe electronic literacy-based behavioral interventions and provide a step-by-step guide for developing and using them in the classroom to support students with intellectual and developmental disabilities with learning interviewing skills. Implications and future research suggestions are also described.

Sexuality education for students with intellectual and developmental disabilities can be challenging due to lack of clarity for sexuality educators, delayed onset of sexuality education, and a one size fits all approach to sexuality education. Sexuality education should represent the whole person, and student identities can be complex, especially for individuals with disabilities. It's important to help educators, families, and community health educators understand intersectional curricula and resources to support marginalized groups in their understanding of sexuality education topics. Christine Scholma, Ruth Eyres, Victoria Slocum, and Elizabeth Harkins Monaco reviewed sexuality education resources and curricula designed for teaching people with intellectual and developmental disabilities from an intersectional perspective to assist in selecting materials that represent complex student identities. In their article "Include All of Me: Intersectionality in Sexuality Education for Students with Disabilities", the authors discuss the strengths and limitations of curricula and resources identified through their search as well as provide recommendations for educators and limitations of this work.

As more individuals with intellectual disability and other developmental disabilities are educated in inclusive settings, educators must understand how to teach social skills in the content areas. In their article, "Cracking the Social Code: A STEM and Social Skills Curriculum for Students with Intellectual and Developmental Disabilities," Claire Donehower Paul, Sarah Hansen, Chelsea Marelle, Robert Pennington, Brian Grace, Monique Pinczynski, Janet Enriquez, Jessica De Marco, and Eleazar Vasquez present the Effects of Project Social Code, an instructional package embedding social skills using robotics (Dash™) within a computer

coding curriculum designed for children with ASD. The primary goals of Project Social Code are to improve outcomes for students with IDD in the areas of social communication skills and social robotics. Results of this pilot study indicate that teachers could implement the curriculum with fidelity and saw the value in using the curriculum. Students with intellectual disability or developmental disabilities demonstrated an increase in social skills.

Student mental health is an increasing concern for colleges and universities and students with disabilities may be at an increased risk for mental health conditions. As the number of students with disabilities, including students with autism and intellectual disabilities, attending college increases, it's important to investigate the frequency, types, and perceived impact of mental health conditions on the college experience for students with disabilities. In their article, "Mental Health of College Students with Disabilities", S. Jay Kuder and Amy L. Accardo examine the prevalence and type of mental health conditions reported by college students with disabilities as well as explore student perspectives regarding disclosure of mental health conditions, supports and accommodations for mental health conditions, and perceived impact of mental health conditions on academic and nonacademic college success. Students with autism spectrum disorder reported the highest rates of mental health conditions (92%) and disclosure rate was 76%, with students reporting they disclosed primarily for accommodations and support services. The authors provide recommendations for an individualized approach to mental health supports for college students with disabilities, including implications for practice.

Educator preparation programs need practice-based opportunities to improve the efficacy of early career teachers. In the article, "Case Studies on Students with IDD and Moderate to Extensive Support Needs: A Document Analysis," Jeongae Kang, Kathryn Haughney, and Aftynne Cheek provide a document analysis of case studies found in the literature that included individuals with IDD who have moderate to severe support needs that could utilize case learning. Case learning involves using case studies to help teachers improve their knowledge and understanding of student learning. Fourteen case studies were identified and analyzed for content. Identified case studies lack descriptions of participant diversity and cultural differences. Authors provide implications for educator preparation programs.

Educators and families need to understand the legal requirements for developing and implementing an individualized education program (IEP). In "How to Avoid Predetermination of Student Eligibility, Services, and Placement," authors Jo Nell Wood, Nikki Murdick, and Amanda Wood provide an overview of the legal parameters in the IEP determination phase and guidance for teachers and parents navigating that process. The authors underline the importance and legality of parent consent in co-determining placement decisions and caution stakeholders about potential planning or decision making outside of the IEP meeting, offering guidance to avoid unintentional predetermination.

Assistive technology has shown great promise for teaching social learning. In this article, Eileen M. Glavey, Rebecca A. Hines, and Matthew S. Taylor introduce the reader to socially assistive robots as a new technology for educational use. Project

RAISE (*Robots and Artificial Intelligence to Improve Social Skills for Elementary Students*) is a five-year federally funded Stepping Up grant project creating a teaching toolkit featuring the commercially available Dash™ robot and an AI-driven socially assistive robot, Zoobee™, currently in development through this project. The toolkit provides students with experiences that include learning basic coding while practicing real-world skills like problem-solving, collaboration, cooperation, and strategic thinking. Project RAISE is a promising intervention allowing teachers to collect data on social learning while teaching coding.

As more individuals with autism spectrum disorder are attending college, it's important to examine barriers to successful participation and completion in higher education settings. This study explored the attitudes of neurotypical students towards individuals with autism spectrum disorder. In "University Students' Perceptions of Individuals with Autism Spectrum Disorder" Leslie Meskin, Noelle Balsamo, Annemarie Connor, Adrienne Yaryan, and Kevin Loch surveyed 139 neurotypical students' level of knowledge of individuals with autism spectrum disorder, the number and type of relationship neurotypical college students have with individuals with autism spectrum disorder, and to what extent, if any, level of knowledge or relationships predict perceptions of stigma. Results suggest that graduate students demonstrated significantly higher levels of knowledge compared to undergraduates and stigma levels were similar across groups. Knowledge was also identified as a significant predictor of stigma. The authors provide implications for practice and research.

In her article, "Autism: Social Confidence Needed to Improve Post-Secondary Life Outcomes," Katherine Fowle discusses social learning needs in post-secondary education through an authentic lens in this article. The author shares her struggles as a neurodiverse adult and through her lived experience, she identifies essential skills to address the barriers neurodiverse adults face in the workplace. She highlights the Social Confidence: Scope and Sequence Tool as a guide for thoughtful and intentional planning and tracking of progress in the essential skills over all of the schooling years.

Kristyn Stetson's article, "Incorporating Life Skills and Community-Based Learning into Elementary Special Education Curriculum" explores the perceptions of life skills instruction and community-based education as expressed by elementary educators and parents of students with disabilities. The author draws on semi-structured interviews to consider how educators can support students in learning daily living skills and building relationships in the community, while also addressing important academic standards.

The conference provided educators and researchers with the opportunity to explore current research, topical issues, and best practices relating to autism, intellectual disability, and development disabilities. We hope readers of this research to practice issue of the *DADD Online Journal* find the information valuable and timely.

Correspondence concerning this article should be addressed to Stanley H. Zucker, Special Education Program, Mary Lou Fulton Teachers College, Box 871811, Arizona State University, Tempe, AZ 85287-1811. Email: stan@asu.edu

Diversity, Equity, and Inclusion in Children's Literature: A Content Analysis of 40 Books

Tina M. Taylor
Brigham Young University

Hailey Hardy
Brigham Young University

Camryn McComas
Brigham Young University

Meaghan M. McCollow
California State University East Bay

Christine Scholma
Trinity Christian College

Abstract: Screening and selecting inclusive and diverse books that include characters with developmental disabilities that are well-represented can be challenging. Using the Rating Scale for Quality Characterizations of Individuals with Developmental Disabilities in Children's Literature to conduct a mixed-method content analysis, we evaluated books considered for the 2022 Dolly Gray Children's Literature Award: 20 picture books, 19 chapter books, and one graphic novel (n=40) for their portrayals of 50 characters with developmental disabilities (DD). Results indicate that half of the characters portrayed have autism spectrum disorders (n=25; 50%), and the majority are female (n=26; 52%). The portrayals of almost all characters with DD are positive and realistic, and generally, characters develop dynamically in the stories. Most engage in positive social relationships with friends and family and are included in integrated settings to some degree. Approximately one-third of the stories are in the voice of a character with DD. To help school professionals select and use appropriate literature for children and youth, we provide several teacher-friendly materials: a link to the Quality Characterizations Scale, a checklist for choosing books with authentic representations, a detailed list of all books considered for the Dolly Gray Award, a list of several guiding questions to facilitate classroom or home discussions, and a link to annotations for each book.

Efforts related to diversity, equity, and inclusion abound in today's society. From training faculty at higher education institutions to provide appropriate accommodations to teaching preschool children to make friends who are different from them in some way, issues related to creating a more inclusive citizenry are at the forefront of many current educational initiatives. However, one form of diversity not gaining as much attention as others is that of ability/disability. A genuinely inclusive society accepts, respects, and cherishes all its people despite their differences, particularly their disabilities (United Nations, 2009).

This article describes an analysis of characterization of individuals with developmental disabilities (DD) in books eligible for consideration for the 2022 Dolly Gray Children's Literature Award. This award recognizes authentic depictions of characters with DD in literature for children and youth. First, we discuss the role of children's literature in promoting diversity, equity, and inclusion, followed by recent depictions of disability in children's literature. We also describe the study's methods and results, followed by a discussion of how children, youth, family, teachers, and other service providers can select and use

these books to improve their relationships with those with disabilities. For individuals with disabilities, the study points to how students see themselves within these stories.

Promoting Diversity, Equity, and Inclusion Through Children's Literature

With the heightened racial and political divides in the United States, it is incumbent upon our nation to increase efforts to promote diversity, equity, and inclusion (DEI) of all humanity. Current DEI efforts intend to help employees in the workplace, members of religious organizations, students attending college, and even PreK-12 students. Often, these efforts come in the form of organized training and workshops, sometimes in association with reading relevant and popular literature. One form of literature used to expand the DEI principles for students is fictional, biographical, and autobiographical works written for children and youth. Bishop (1990) provides an often-cited analogy regarding how readers relate to literature:

> Books are sometimes windows, offering views of worlds that may be real or imagined, familiar or strange. These windows are also sliding glass doors, and readers have only to walk through in imagination to become part of whatever world has been created and recreated by the author. When lighting conditions are just right, however, a window can also be a mirror. Literature transforms human experience and reflects it back to us, and in that reflection we can see our own lives and experiences as part of the larger human experience. Reading, then, becomes a means of self-affirmation, and readers often seek their mirrors in books. (p. ix)

Children and youth who have family members or friends with disabilities can benefit from the windows and sliding glass doors that are provided by books with characters with disabilities. Also, children and youth with disabilities can benefit from the mirrors -- reflecting aspects of their own lives -- that they find represented in appropriate literature, particularly in stories that are voiced by individuals with disabilities. Thus, children's literature with authentic portrayals, discourse, and contexts can powerfully influence young readers as they increase their understanding and acceptance of students with disabilities (Sotirovska & Vaughn, 2021), while readers with disabilities may increase their self-awareness and esteem as they see characters like themselves depicted in engaging stories. However, not all literature lends itself to such appropriate understandings. Therefore, it is important to know how to find and share books that contest ableist discourses and feature characters labeled with disabilities while living multidimensional and agentic lives (Kleekamp & Zapata, 2018).

Recent Depictions of Characters with Disability in Children's Literature

In the past few years, researchers have analyzed children's literature depicting characters with different disabilities and have reported various results. Sotirovska and Vaughn (2021) investigated the portrayal of characters with dyslexia in children's picture books and found imbalances in ethnicity, race, and geographic location. They also studied self-advocacy and agency, school experiences, classroom interactions, and peers' exchanges. Based on their conclusions, they warned, "without a robust and diverse depiction of characters with dyslexia across race, ethnicity, gender, and socioeconomic status, the stigma about dyslexia will perpetuate among the most vulnerable children and communities" (p. 740).

Hayden and Prince (2020) studied 34 exemplary picture books that featured a main character with a disability. They found a disproportionate number of books that include characters with low-incidence disabilities. Still, the books depicting those with high-incidence disabilities were rated highest for attributes such as self-awareness, agency, and acceptance. Notably, they found that the highest rated books challenged ableist myths regarding disability while providing readers with ways to recognize and reject stereotyping, bullying, and teasing.

Meacham (2021) studied disabilities portrayed in picture books considered for the Américas Award for Children's and Young Adult Literature to investigate the intersectionality of disabilities and LatinX racial identity. Results indicated disproportionality related to the characters with disabilities and the types of their disabilities relative to the U.S. PreK-12 population, with low-incidence disabilities overrepresented.

These most recent studies identify concerns related to disproportionality, stigma, and stereotypes. While there is research related to these areas, there is clearly a paucity of research investigating family dynamics within children's books that includes children with DD. Therefore, the current study examines the portrayal of characters with developmental disabilities and their relationships with their siblings and with others in 40 books considered for the 2022 Dolly Gray Children's Literature Award. The following research questions guided this study: (1) How are characters with developmental disabilities portrayed in books considered for the 2022 Dolly Gray Award?, (2) Are social interactions involving characters with disabilities and others primarily positive, neutral, or negative?, (3) What exemplary practices are portrayed in these books?, (4) Are relationships between characters with disabilities and their siblings primarily positive, neutral, or negative?, and (5) From whose point of view are these stories told?

Method

Design

The current study employed a mixed-method, concurrent triangulation design within a one-phase project. That is, we collected both quantitative and qualitative data via a survey to find answers to our research questions regarding the 40 books that were eligible for the 2022 Dolly Gray Children's Literature Award and the 50 characters within those books.

Book Selection

The following criteria were applied to determine which books were eligible for consideration: books must: (a) include a main or supporting human character with a DD (main characters are critical to the plot, often as protagonists or antagonists, and supporting characters are important to the growth of the main characters or to the development of the plot); (b) be written in story format (fiction or biography) for a target audience of children or adolescents; (c) be copyrighted/published in 2020 or 2021 (or have missed the deadline to be considered for the 2020 award) or reprinted from an earlier publication date, but not previously considered for the award; (d) have been published in and/or translated into English; and (e) have been published by a commercial publisher (no self-published works).

The first step in this process was for the Dolly Gray Award Selection and Review Committee Chair and Committee to search online sources (e.g., Amazon, Children's Books in Print, Goodreads) using terms such as *Asperger, autism, developmental disability, Down syndrome, intellectual*

disability, fetal alcohol syndrome, multiple disability, neurodiversity (and their variants). As with previous studies on books considered for the Dolly Gray Award, we used the definition of DD found in the Developmental Disabilities Assistance and Bill of Rights Act (2000). Thus, the books we reviewed included characters such as those with intellectual disability, multiple disabilities, and autism spectrum disorders (ASD), but did not include characters diagnosed with emotional/behavioral disabilities alone (e.g., anxiety, attention deficit hyperactivity disorder, obsessive-compulsive disorder). After conducting an initial screening (e.g., date range, character with DD, fiction/biography), the committee acquired potentially eligible books. Many publishers and authors submitted books to the committee for consideration for the award without being requested. A subsequent review of all books included a full analysis to determine eligibility.

Materials

Of the 98 books screened, 40 were considered eligible for the 2022 Dolly Gray Children's Literature Award. Using the *Rating Scale for Quality Characterizations of Individuals with Disabilities in Children's Literature* (aka *Quality Characterizations Scale*; Taylor & Prater, 2020), the content of each book was examined. We used five subscales of the *Quality Characterizations Scale* to conduct the analyses: (a) personal portrayal, (b) social interactions, (c) exemplary practices, (d) sibling relationship, and (e) point of view. Each subscale uses a Likert-type scale for quantitative items (1 = *strongly disagree*, 5 = *strongly agree)* and some subscales include descriptive items. A mean score for the quantitative items in each subscale was determined; higher scores indicate more authentic portrayals. The Personal Portrayal subscale includes descriptive items such as age, sex, and race, along with six quantitative items related to accurate, non-stereotypical portrayal. The Social Interactions subscale includes several descriptive items such as victim/perpetrator/protector, as well as five quantitative items such as socially and emotionally reciprocal relationships. The Exemplary Practices subscale includes five quantitative items such as having full citizenship opportunities in integrated settings. The Sibling Relationships subscale includes five quantitative items, such as how siblings of children with disabilities experience a wide range of emotions. The Point of View subscale has one descriptive item to determine from whose point of view the story is written, and two quantitative items related to determine if the point of view of the character with or without a disability is realistic (See Taylor et al., 2020 for additional information about the *Quality Characterizations Scale*).

Procedure

After we screened and determined the books to be eligible for the award, 20 panelists (including the five researchers) reviewed and evaluated the books over a period of approximately 12 months. Some panelists reviewed all the books, while others reviewed a subset (e.g., all picture books or all chapter books). The review panel included individuals from throughout the U.S. and Canada, including disability specialists (n = 8, 40%), family members (n = 4, 20%), school-based professionals (n = 2, 10%), self-advocates (n = 2, 10%), authors/illustrators (n = 2, 10%), a university professor who supervised a student panel of approximately 30 undergraduate students (n = 1, 5%), and a library/information scientist (n = 1, 5%). Panelists read each book and independently used the *Quality Characterizations Scale* to evaluate characterizations of individuals with DD. They submitted their evaluations using Qualtrics survey software.

Data Analysis

The primary researchers analyzed the qualitative data (e.g., age, sex, race, disability) by reviewing panelists' responses to the descriptive items. If all panelists agreed, we considered the description to be accurate. We settled discrepancies by jointly reviewing and discussing differences. On a few occasions, we reviewed information on author websites or other credible sources such as Kirkus Reviews before coming to an agreement. In some instances, if the race/ethnicity of the character was not apparent either in text or illustrations, we presumed the character presented to be White. Similarly, if a specific disability was not mentioned, we noted the character had a DD of unspecified origin or label. If the character's age was not specified, we used contextual cues to determine an age range (e.g., settings that indicate an elementary school, size of the character in comparison to siblings).

We analyzed quantitative data from the five subscales to determine the nature of the depictions of characters with DD and the practices affecting them. We summed ratings of each of the five subscales from each reviewer for each book. We then calculated the mean of each subscale for each book to determine a negative (1-2.49), neutral (2.5-3.5), or positive score (3.51-5). Positive and neutral ratings were considered acceptable. For example, a statement reviewers responded to in the Personal Portrayal section is, "Describes the character(s) with DD as realistic (e.g., not superhuman or subhuman; avoids miraculous cures)." The reviewer selected a response from the Likert-type scale ("strongly disagree" to "strongly agree"). If the mean of all the responses was 1-2.49, the depiction was considered unrealistic. If the mean was 2.5-3.5, the depiction was considered slightly realistic. If the mean was 3.51-5, the depiction was considered realistic. Similarly, another statement describes the character development (e.g., credible, multidimensional, shows appropriate change or development throughout the story), and agreement to this statement was rated similarly: (1-2.49 = static), (2.5-3.5 = slightly dynamic), (3.51-5 = dynamic).

Results

In the following section, we provide results from the content analysis related to the 40 books and 50 characters with DD. We also present results related to the authenticity of the character representations in five areas: the portrayal of the characters with DD, social interactions, exemplary practices, relationships with siblings, and point of view.

Description of Books Reviewed

Of the 98 books screened, we determined 40 eligible for review, including one graphic novel (*When Stars Are Scattered*; 2.5%), 20 picture books (50%), and 19 (47.5%) chapter books. Four books include more than one character with DD (e.g., *I Have an Autism Boost*; *The Kids of Widney Junior High*), and a few books also include minor characters with DD (e.g., *We Want to Go to School*; *Hockey Every Day, Every Way*) or characters with other disabilities such as deafness (e.g., *Erin, Roderick, and the Diffability Bunch)* and orthopedic impairments (e.g., *Even If We Break*). Of the 40 books, 22 (55%) appear to be inspired by real individuals (e.g., *Dancing With Daddy; Do You Know Me?; Expect a Miracle; I am Odd, I am New; The Kids of Widney Junior High*), often noted in an author note or on the inside book jacket flap. A list of the books, including the title, author, illustrator (if applicable), and appropriate reading/interest levels, can be found in Table 1.

Table 1. *Books with Main or Supporting Characters with Developmental Disabilities*

Title, Author (Illustrator), Reading/Interest Grade Levels
Autism Spectrum Disorders
Bad Best Friend, Rachel Vail, Middle School
Can You See Me?, Rebecca Westcott & Libby Scott, Middle School
Do You Know Me?, Rebecca Westcott & Libby Scott, Middle School
Duck Days, Sara Leach (Rebecca Bender), Upper Elementary
Erin, Roderick, and the Diffability Bunch, Fliss Goldsmith (Ian R. Ward), Lower Elementary
Even If We Break, Marieke Nijkamp, High School
Expect a Miracle, Sandy and David Petrovic, High School
Frankie & Amelia, Cammie McGovern, Middle School
I am Odd, I am New, Benjamin Giroux (Roz MacLean), Lower Elementary
I Have an Autism Boost, Jennifer Gilpin Yacio, Temple Grandin (Farrington Wilson), Lower Elementary
It Was Supposed to Be Sunny, Samantha Cotterill, Lower Elementary
The Kids of Widney Junior High, Mathew Klickstein (Michael S. Bracco), Middle School
Lupe Wong Won't Dance, Donna Barba Higuera, Middle School
My Life with Autism, Mari Shuh (Isabel Muñoz), Lower Elementary
Noki, Douglas Farrago, High School
Planet Earth is Blue, Nicole Panteleakos, Middle School
The Perfect Project, Dr. Tracy Packiam Alloway (Ana Sanfelippo), Lower Elementary
Real, Carol Cujec & Peyton Goddard, Middle School
Too Sticky!, Jen Malia (Joanne Lew-Vriethoff), Lower Elementary
Tornado Brain, Cat Patrick, Middle School
We Could Be Heroes, Margaret Finnegan, Upper Elementary
Down Syndrome
Best Buddies, Lynn Plourde (Arthur Lin), Lower Elementary
Collette in Kindergarten, Colette Divitto (Katie Mazeika), Lower Elementary
The Degenerates, J. Albert Mann, High School
Different--A Great Thing to Be, Heather Avis (Sarah Mensinga), Lower Elementary
Erin, Roderick, and the Diffability Bunch, Fliss Goldsmith (Ian R. Ward), Lower Elementary
Hooray for Hockey Day!, Jane J. Jones Beehler (Cory Jones), Upper Elementary
It's Hockey Season, Jane J. Jones Beehler (Cory Jones), Upper Elementary
My Life with Down Syndrome, Mari Schuh (Isabel Muñoz), Lower Elementary
Out Into the Big Wide Lake, Paul Harbridge (Josée Bisaillon), Lower Elementary
You are Enough, Margaret O'Hair (Sofia Cardoso), Lower Elementary
Intellectual Disability & Developmental Disability
The Kids of Widney Junior High, Mathew Klickstein (Michael S. Bracco), Middle School
Sunnyside Plaza, Scott Simon, Middle School
When Stars Are Scattered, Victoria Jamieson & Omar Mohamed (Victoria Jamieson & Iman Geddy), Upper Elem.
Multiple Disabilities
Dancing with Daddy, Anitra Rowe Schulte (Ziyue Chen), Lower Elementary
Fast Friends, Heather M. O'Connor (Claudia Dávila), Lower Elementary
Hockey Every Day, Every Way, Jane J. Jones Beehler (Cory Jones), Upper Elementary
I See You See, Richard Jackson (Patrice Barton), Lower Elementary
I Will Dance, Nancy Bo Flood (Julianna Swaney), Lower Elementary
The Kids of Widney Junior High, Mathew Klickstein (Michael S. Bracco), Middle School
My Brother Jeffrey, Linda Danney Britton & Amy Britton-Ballas (Isabella Russell), Lower Elementary
Scottie on the Space Station, Kaela C. Green (Shannon E. Green), Lower Elementary
We Want to Go to School, Maryann Cocca-Leffler & Janine Leffler (Maryann Cocca-Leffler), Lower Elementary

Authentic Representations of Characters with Developmental Disabilities

Reviewers analyzed representations of the 50 main and supporting characters with DD across five themes: (a) personal portrayal; (b) social interactions; (c) exemplary practices; (d) sibling relationships, and (e) point of view. We included data related to the graphic novel in the analyses of chapter books since the story is organized by chapters. The mean score for each subscale for the set of 40 books was in the positive range; no mean scores were neutral or negative. Furthermore, no individual books were rated as negative in any subscales, although some were rated as neutral.

Personal Portrayal

The overall mean score (1 = negative, 5 = positive) for the portrayals of the 50 characters with DD was positive (x=3.97). A positive portrayal was found among 47 characters (94%), while a neutral portrayal of the individual with DD was found in 3 of the characters (6%). None of the books included a character rating indicating a negative portrayal. We provide brief summaries of these characteristics in Tables 2 and 3 and provide data below for some of the items from this subscale.

Main or supporting level. Of the 50 characters with DD, we determined 30 (60%) to be the *main* character, with 20 (40%) as supporting characters.

Personal characteristics. Most characters with DD are portrayed as female (n=26; 52%). We determined 15 characters (30%) to be Black, Indigenous, People of Color (BIPOC). Ages range from young child to adult. In two books, the characters with DD are depicted in various age stages (i.e., *Expect a Miracle, When Stars Were Scattered*).

Of the 50 characters with developmental disabilities, half (n=25; 50%) are individuals with ASD. Almost all of them could be considered to be relatively high functioning as they appear to be learning from the general education curriculum in classrooms with their typically developing peers (often without a paraeducator) and generally are verbal with few or no displays of significant challenging behaviors. Three characters appear to be cognitively capable, but their intelligence is masked by their autistic characteristics; they use augmentative and alternative forms of communication with some or limited success (Gus in *Frankie and Amelia*, Nova in *Planet Earth is Blue*, and Charity in *Real*). Dora in *Erin, Roderick, and the Diffability Bunch* has mutism along with ASD. The other characters with DD include individuals with multiple disabilities (typically physical disabilities accompanied by other disabilities; n=11, 22%), Down syndrome (n=11, 22%), unspecified developmental disabilities (n=2, 4%), or intellectual disabilities (n=1, 2%). Some authors chose not to label the character's disability, such as in *Best Buddies; I See, You See; I Will Dance; Fast Friends;* and *My Brother Jeffrey,* but evidence of the disability appears elsewhere, such as in an author's note or within the text as the author describes characteristics -- but not the label -- of the disability.

Realistic depiction. We found most of the characters to be depicted realistically (n=47, 94%). We determined other characters to be "slightly realistic" (n=3, 6%) and no characters to be unrealistic. Many of the books portray the strengths of the character with DD, such as self-determination and courage. For example, in *Out into the Big Wide Lake,* Kate, a teenager with Down syndrome helps her grandfather deliver groceries to the lakeside neighbors. After her grandfather was taken to the doctor due to a

Table 2. *Characterizations in Picture Books*

Book Title	Character	Personal Characteristics	Level of Characterization	Personal Portrayal	Realistic Depiction	Character Development	Point of View
Best Buddies	Unnamed	Elementary-aged white male with DS	Main	Positive	Partially Realistic	Slightly Dynamic	Narrator
Collette in Kindergarten	Collette	Elementary-aged white female with DS	Main	Positive	Realistic	Dynamic	Narrator
Dancing with Daddy	Elsie	Elementary-aged BIPOC female with MD	Main	Positive	Realistic	Dynamic	Narrator
Different--A Great Thing to Be	Macy	Elementary-aged white female with DS	Main	Positive	Realistic	Dynamic	Narrator
Erin, Roderick, and the Diffability Bunch	Dora	Elementary-aged BIPOC female with ASD and mutism	Supporting	Positive	Realistic	Slightly Dynamic	Narrator
	Ryan	Elementary-aged white male with DS	Supporting	Positive	Realistic	Slightly Dynamic	Narrator
Fast Friends	Suze	Elementary-aged white female with MD	Supporting	Positive	Realistic	Slightly Dynamic	Narrator
I am Odd, I am New	Benjamin	Elementary-aged white male with ASD	Main	Positive	Realistic	Dynamic	First Person (Benjamin)
I Have an Autism Boost	Lucas	Elementary-aged white male with ASD	Main	Positive	Realistic	Dynamic	Narrator
	Olivia	Elementary-aged white female with ASD	Main	Positive	Realistic	Dynamic	Narrator
	Chris	Elementary-aged BIPOC male with ASD	Main	Positive	Realistic	Dynamic	Narrator
I See, You See	Jonah	Elementary-aged male white with MD	Main	Positive	Realistic	Slightly Dynamic	Narrator
It Was Supposed to be Sunny	Laila	Elementary-aged BIPOC female with ASD	Main	Positive	Realistic	Dynamic	Mixed (narrator, mom, friends)
I Will Dance	Eva	Elementary-aged BIPOC female with MD	Main	Positive	Realistic	Dynamic	First Person (Eva)
My Brother Jeffrey	Jeffrey	Elementary-aged white male with MD	Supporting	Positive	Realistic	Slightly Dynamic	First Person (Amy, sister)

My Life with Autism	Zen	Elementary-aged BIPOC male with ASD	Main	Positive	Realistic	Dynamic	First Person (Zen)
My Life with Down syndrome	Peter	Elementary-aged BIPOC male with DS	Main	Positive	Realistic	Dynamic	First Person (Peter)
Out Into the Big Wide Lake	Kate	Middle school-aged white female with DS	Main	Positive	Realistic	Dynamic	Narrator
The Perfect Project	Charlie	Elementary-aged white male with ASD	Main	Positive	Realistic	Dynamic	Narrator
Scottie on the Space Station	Scottie	Elementary-aged white male with MD	Supporting	Positive	Realistic	Slightly Dynamic	First Person (Ellie, sister)
Too Sticky!	Holly	Elementary-aged white female with ASD	Main	Positive	Realistic	Dynamic	Narrator
We Want to Go to School	Janine	Adult white female with MD	Main	Positive	Realistic	Dynamic	First Person (Janine)
You are Enough	Sofia Sanchez	Elementary-aged white female with DS	Main	Positive	Realistic	Slightly Dynamic	First Person (Sofia)

Note. ASD = autism spectrum disorder; DD = developmental disability; DS = Down syndrome; MD = multiple disabilities

Table 3. *Characterizations in Chapter Books*

Book Title	Character	Personal Characteristics	Level of Characterization	Personal Portrayal	Realistic Depiction	Character Development	Point of View
Bad Best Friend	Danny	Elementary-aged white male with ASD	Supporting	Positive	Realistic	Dynamic	First Person (Niki, friend)
Can You See Me?	Tally	Middle school-aged white female with ASD	Main	Positive	Realistic	Dynamic	First Person (Tally)
The Degenerates	Rose	Middle-school aged white female with DS	Supporting	Neutral	Partially Realistic	Dynamic	Narrator
Do You Know Me?	Tally	Middle school-aged white female with ASD	Main	Positive	Realistic	Dynamic	First Person (Tally)
Duck Days	Lauren	Elementary-aged white female with ASD	Main	Positive	Realistic	Dynamic	First Person (Lauren)
Even if We Break	Maddy	High school-aged white female with ASD	Supporting	Neutral	Realistic	Slightly Dynamic	First Person Narrators (Maddy, friends)
Expect a Miracle	David	Lifespan, white male with ASD	Main	Positive	Realistic	Dynamic	First Person (Sandy Petrovich, mom)
Frankie & Amelia	Amelia	Elementary-aged white female with ASD	Main	Positive	Realistic	Dynamic	First Person (Frankie, the cat)
	Gus	Elementary-aged white male with ASD	Supporting	Positive	Realistic	Dynamic	First Person (Frankie, the cat)
Hockey Every Day, Every Way	Lila	Elementary-aged white female with MD	Main	Positive	Realistic	Dynamic	Narrator
Hooray for Hockey Day!	Blaine	Elementary-aged white male with DS	Supporting	Positive	Realistic	Slightly Dynamic	Narrator
	Ann	Elementary-aged white female with DS	Supporting	Positive	Realistic	Slightly Dynamic	Narrator
It's Hockey Season	Blaine	Elementary-aged white male with DS	Supporting	Positive	Realistic	Slightly Dynamic	Narrator
The Kids of Widney Junior High	PeeWee	Junior high-aged BIPOC male with ASD & Blindness	Supporting	Positive	Realistic	Dynamic	First Person (Robbie Wilson, friend)
	Elisa	Junior high-aged BIPOC female with ID	Supporting	Positive	Realistic	Dynamic	First Person (Robbie Wilson, friend)

	Shelly	13-year old BIPOC male with ASD	Supporting	Positive	Realistic	Dynamic	First Person (Robbie Wilson, friend)
	Daniel	Junior high-aged BIPOC male with MD	Supporting	Positive	Realistic	Dynamic	First Person (Robbie Wilson, friend)
	Cain	Junior high-aged BIPOC male with MD	Supporting	Positive	Realistic	Dynamic	First Person (Robbie Wilson, friend)
	Tanesa	13-year old BIPOC female with MD	Supporting	Positive	Realistic	Dynamic	First Person (Robbie Wilson, friend)
Lupe Wong Won't Dance	Niles	12-year old white male with ASD	Supporting	Positive	Realistic	Slightly Dynamic	First Person (Lupe Wong, friend)
Noki	Noki	Young Adult BIPOC male with ASD	Main	Neutral	Partially Realistic	Dynamic	Narrator
Planet Earth is Blue	Nova	12-year old white female with ASD	Main	Positive	Realistic	Dynamic	Narrator and First Person (Nova)
Real	Charity	13-year old white female with ASD	Main	Positive	Realistic	Dynamic	First Person (Charity)
Sunnyside Plaza	Sally Miyake	19-year old white female with DD	Main	Positive	Realistic	Dynamic	First Person (Sally)
Tornado Brain	Frankie	13-year old white female with ASD	Main	Positive	Realistic	Dynamic	First Person (Frankie)
We Could Be Heroes	Hank	Elementary-aged white male with ASD	Main	Positive	Realistic	Dynamic	Narrator

Note. ASD = autism spectrum disorder; DD = developmental disability; DS = Down syndrome; ID = intellectual disability; MD = multiple disabilities

cardiac incident, Kate decides to drive the boat independently to deliver the groceries, which helps change the attitude of a grumpy, old neighbor who previously didn't trust her.

Character development. Of the 50 characters with DD, we found 36 (72%) to be dynamic as they showed appropriate change or development throughout the story, 14 (28%) slightly dynamic (only developed in minor ways), and none were static. Of characters described as slightly dynamic, eight were characters in picture books. With shorter stories, it is more challenging to show character development; however, 60% of the picture book characters were assessed as being dynamic in nature. For example, when Charlie, a young boy with ASD in *The Perfect Project*, has difficulty joining his peers in a science project, he runs out of the classroom feeling upset. However, at the noisy science fair when Charlie is given noise-canceling headphones, he gathers the courage to share train facts, helping his team win.

Social Interactions

The overall mean score (1 = negative, 5 = positive) for the Social Interactions subscale was 3.92 (positive). The majority of the characters were rated as engaging primarily in positive social relationships (*n*=43, 86%), six were neutral (12%), and one was negative (2%; *My Brother Jeffrey*).

Most characters did not have one distinct primary relationship (*n*=29, 58%); rather, they were depicted as having important relationships with several people such as parents, siblings, peers with and without disabilities, and teachers/therapists. The most common primary relationship the character with DD had was with typically developing friends (*n*=8, 16%). Many characters also had a primary relationship with a sibling (*n*=4, 8%), parents (*n*=3, 6%), friends with disabilities (*n*=3, 6%), and others such as a dog or grandparents (*n*=2, 4%). Benjamin, in *I Am Odd, I Am New*, is depicted as not having any primary relationships. The book *Frankie & Amelia* describes two positive -- and unique -- relationships. One is a relationship between Gus and his service dog, Chester, and the other is between Amelia and her service cat, Frankie. Frankie, in particular, changes his attitude and perspective on life as he learns from and develops a love for Amelia, who has ASD. Each helps the other handle difficult or scary situations and become better because of their relationship.

Exemplary Practices

Exemplary practices refers to research-based practices such as having full citizenship opportunities in integrated settings, valued occupations, and opportunities for self-determination. It also includes services that are generally accepted within the field of special education, such as, but not limited to, The Council for Exceptional Children's High Leverage Practices for Students with Disabilities, which includes exemplary practices in the areas of assessment, collaboration, instruction, and social/emotional/behavioral supports (High Leverage Practices for Students with Disabilities, n.d.). The overall mean score (1 = negative, 5 = positive) for exemplary practices was 3.83 (positive). We found depictions of exemplary practices in the stories for 42 characters (84%), seven were neutral (14%), and one (*Real*; 2%) was rated as having overall negative practices due, in part, to the use of facilitated communication, a communication strategy with limited empirical evidence (American Speech-Language-Hearing Association, 2018). Full citizenship opportunities are apparent in *I Will Dance*, when Eva, who uses a wheelchair for mobility, can learn to dance in a class designed for dancers of all abilities.

Similarly, Sofia, who has Down syndrome (*You Are Enough*), is fully included in various settings and encourages readers to "Just Be You! Because you are enough." Two descriptive items related to exemplary practices include schooling/education and residence of the character with DD.

Schooling and education. Depictions of most characters included school settings (*n*=31, 62%). When the settings involved schooling, the students were most frequently educated in general education classrooms (*n*=17, 34%) or a mix of general and special education classrooms (*n*=10, 20%). Other educational environments include a special education classroom (*n*=1, 2%), a special school (*n*=1, 2%), and an institution (*n*=1, 2%). One example of a mix of classes is found in *The Kids of Widney Junior High*. Although based on real individuals who attend a special school, the story is set in a typical junior high school, and the characters with DD attend both special and general education classes. In *When Stars Are Scattered*, Hassan, who has unspecified developmental disabilities, does not go to school due to his circumstance of being a refugee with a disability.

Residence. The primary residence was evident for 41 characters (82%). Most commonly, they lived in their family home (*n*=37, 74%), while some of the characters lived in a group home (*n*=1, 2%), foster care (*n*=1, 2%), an institution (*n*=1, 2%), or refugee camp (*n*=1, 2%). For example, in *Planet Earth is Blue*, Nova's life starts in a family home with an unstable mother, as she is taken care of primarily by her older sister, Bridget. After being admitted to and moved around in the foster care system for many years, Bridget leaves, and eventually Nova is adopted. The family who adopts Nova treats her with love and care.

Sibling Relationships

Of the 50 characters evaluated, 26 (52%) had at least one sibling depicted in the story. The mean score (1 = negative, 5 = positive) for the Sibling Relationships subscale was 3.83 (positive). A majority (*n*=22, 85%) of the sibling relationships portrayed were positive. Only a few (*n*=4, 15%) of the relationships were rated neutral. In *Tornado Brain*, what starts as a sister rivalry turns into a loving, positive relationship between Frankie, a 13-year-old with ASD, and her older sister Tess. When a mutual friend goes missing, they eventually come together to uncover the clues to find her. Through this journey, their sister relationship grows into one of trust and friendship.

Point of View

Half of the stories (*n*=20; 50%) are told from a third-person point of view -- a limited or omniscient narrator -- and half (*n*=20; 50%) are told solely from a first- or second-person point of view, with 12 of these stories told by the character with DD (30% of all 40 books). Three stories (8%) are told from multiple perspectives, including the perspective of a character with DD (i.e., *It Was Supposed to Be Sunny; Even if We Break; Planet Earth is Blue*). One book is told from the perspective of a cat, Frankie (*Frankie and Amelia*).

Discussion

This study aimed to evaluate the depictions of 50 main and supporting characters with developmental disabilities in 40 children's and youth literature. Analyses focused on basic information about the books along with the personal portrayal of individuals with developmental disabilities, social interactions with others, the inclusion of exemplary practices, relationships with siblings, and point of view. We discuss items from each subscale below with the intent to provide helpful information to parents, school personnel, social workers, and other

professionals who may use children's literature to promote diversity, equity, and inclusion in their homes, classrooms, and other learning spaces.

Books Published

This study included 40 books published over approximately two years, with an average of 20 eligible books published each year. This average is lower than the number of books considered for the Dolly Gray Award in 2020 (*n*=47; Taylor et al., 2020), which may result from reduced publication rates due to the COVID-19 pandemic. Overall, the mean score on each subscale was positive, with only a few books rated as neutral and none having been rated negative. The positive nature of these depictions indicates that those who select one of these books would likely find an authentic portrayal of a main character with DD who engages in positive and reciprocal relationships with typically developing peers and with their siblings, who lives in their family home, receives developmentally- and age-appropriate services, and is educated in general education settings alongside typically developing classmates. Those selecting one of these books, though, will want to consider the demographics of the characters portrayed in these books. There is a higher likelihood of randomly selecting a text including a character with DD who is White, female, and school-aged, who has multidimensional character development, appears to be realistic and relatable, but whose story is told from a point of view that is not their own.

Compared to the results of the books analyzed for the previous award (Taylor et al., 2020), we see interesting trends. For example, in this set of books, more stories are told from the point of view of the character with DD (38% compared to 30%), and more stories are based upon actual individuals (directly or loosely; 52% compared to 15%). Fewer characters have ASD (50% compared to 71%), with a large increase in the percentage of characters with multiple disabilities 22% compared to 0%) and Down syndrome (22% compared to 10%). Most notably, more females with DD in these books are main or supporting characters (52% compared to 26%), and more BIPOC characters are represented (30% compared to 18%). The trend upward in female and BIPOC representation is notable.

Without this representation in children's and youth literature, a significant number of voices are lost. Children's and youth literature provide opportunities for readers to explore the unfamiliar and to find connections with others in their larger communities (Kleekamp & Zapata, 2018). Stories such as *Dancing with Daddy*, *Lupe Wong Won't Dance*, *Planet Earth is Blue*, and *When Stars Are Scattered* give young readers a chance to hear diverse voices or connect with others who share similar experiences and backgrounds. However, more representation is needed -- including gender diversity, sexual orientation, race/ethnicity, and language -- to share more intersectional experiences and stories.

Personal Portrayal

The mean rating for the personal portrayal of the characters with DD was positive, and almost all of the characters were deemed to be positive. There were almost equal numbers of male and female characters, which is rare in children's and youth literature portraying individuals with DD. Of the 25 characters with ASD, 48% are female -- this is not an accurate representation of the proportion of males to females in the population, which is 3:1 (Loomes et al., 2017). It should be noted, though, that there is a high likelihood of gender bias in diagnosing ASD (Loomes et al., 2017). Stereotypical representation of individuals

with ASD in literature is frequent, which includes depicting them as being geniuses, minimizing communication differences, relying only (or heavily) on how individuals with ASD may experience various sensory aspects, and focusing on restrictive, repetitive behaviors, interests, or activities (Barrio et al., 2021). This deficit focus should be avoided; instead, an asset-based (or strengths-based) perspective provides more authentic portrayals of characters with ASD (Barrio et al., 2021). In this study, compared to past years, there were more instances of authentic portrayals of characters with ASD, and of characters using various communication methods. *Tornado Brain* provided a unique perspective of a female character with ASD by using Frankie's inner thoughts and dialogue to show readers her perspective and how she thinks about things. Although this example represents an authentic portrayal of a neurodivergent character, more needs to be done in children's and youth literature to continue to represent the full spectrum of ASD and provide realistic representation of individuals with ASD.

While the proportional representation of disability across the reviewed books does not match actual percentages in US schools (e.g., for children and youth ages 3-21 who have an identified disability, 11% are identified with autism, 7% with developmental delay, 6% with intellectual disability, 2% with multiple disabilities; Irwin et al., 2021), it may be worth noting that the representation in these books impacts the whole of children's and youth literature. Several thousand children's and youth books are published each year, and it has been noted the lack of diverse representation of BIPOC individuals in this literature (Jalissa, 2018). However, even disability representation appears to be an afterthought and not well-represented within children's and youth literature.

Within these stories, most authors do not explicitly identify the race/ethnicity of the characters, leaving the reviewers to use pictorial, linguistic, and cultural cues (if any) to assign racial categories to the characters with DD. Although there was an increase of BIPOC individuals in this set of books from the previous study (Taylor et al., 2020), only 30% of the characters were determined to be BIPOC. The racial representation in eligible texts, as determined in this study, slightly underrepresents people of color compared to the 2021 US Census population estimates: 60.1% White alone, 18.5% Hispanic or Latinx, 13.4% Black alone, 5.9% Asian alone, 1.3% American Indian and Alaska Native alone, and 0.2% Native Hawaiian and Other Pacific Islander. However, because in several instances the race/ethnicity of the character is unclear; these data should be interpreted with caution.

The depiction of nearly all characters resulted in a rating of realistic portrayal, indicating that the books avoided super- or sub-human depictions of the characters with disabilities, and they avoided "fixing" or curing characters of their disability. Having realistic and authentic representation can affect empathy for young readers (Barrio et al., 2021). This realism is evident in Nova's voice in *Planet Earth is Blue*. While Nova, from the outside, is non-verbal and appears to others to be "low-functioning," her thoughts and ideas represent a vast world and complex experiences that only the reader can view and understand. With *Planet Earth is Blue* being set in the 1980s during the early days of the Individuals with Disabilities Education Act, we can presume that Nova did not have access to early intervention or to the supports and services that are available today to help students needing communication services. In the end, we do see the glimmer of hope as Nova connects with someone willing and

able to find ways for Nova to communicate with others.

Social Interactions

The mean rating for social interactions of the characters with DD and others was positive, and 86% of books were rated as positive for social interactions. The characters with DD engage in positive reciprocal relationships with family members, teachers, and friends with and without disabilities. The most common primary relationship depicted is with typically developing peers, demonstrating a trend toward inclusion -- not only in classrooms but in other spaces such as extracurricular activities, organized classes, and parks.

Another aspect in the present study was the depiction of loneliness, or aloneness, in the characters with DD, particularly in those with ASD. For example, in *I Am Odd I Am New*, an illustrated poem by the author Benjamin Giroux, he shares his perspective on being alone in outer space and feeling "out of place." In two books, *Can You See Me?* and *Do You Know Me?*, the authors also share the inner voice of the main character, and it shows the perspective of being alone and misunderstood. These books are written or co-authored by individuals who identify as having a disability which lends an authentic voice.

Exemplary Practices

The mean rating for exemplary practices related to the characters with DD was positive, and we determined that most stories demonstrate exemplary practices. When school environments are depicted, more than half of the time they are general education settings. The representation in general education is encouraging, as many students with DD are educated in segregated settings. For example, in 2017, only 17% of students with intellectual disabilities spent at least 80% of their day in general education settings (McFarland et al., 2019). The high ratio of students with DD being educated alongside their typically developing peers in these books may reflect trends related to higher functioning students with autism. This sample of books had a large proportion of characters with what could be considered along the higher functioning end of the autism spectrum.

Because books can be described as mirrors and windows for students to both see themselves in literature and understand others with empathy (Bishop, 1990), the literature needs to demonstrate exemplary practices to support the reader's understanding of the character's experiences. Accurate depictions of exemplary practices relating to community, educational, and home settings will provide more accurate mirrors or windows for students to understand their personal experience or empathize with the experiences of others with disabilities. One example of exemplary practices in the books reviewed for the 2022 award included the use of assistive technology to support communication for students with DD. With the Centers for Disease Control and Prevention reporting an average of 40% of people with autism communicate without using speech (CDC, 2018), the use of augmentative alternative communication (AAC) has emerged as an exemplary practice in the home, school, and community settings. AAC includes all ways a person can communicate without using speech, including but not limited to the use of technology, picture exchange, and sign language.

Schulte and Chen's (2021) picture book, *Dancing with Daddy*, depicted the main character, Elsie, a child with multiple disabilities, using AAC within her home and community. The story arc included Elsie's

experiences leading up to a dance event in the community, and the author demonstrated how Elsie used her AAC system to express herself and make choices in anticipation of the dance. The entire family invested in ensuring that Elsie's voice was heard, demonstrating dignity and respect in their interactions with Elsie as she communicated using an alternative system. Because research indicates that AAC is an effective mode of communication for students with complex communication disorders and that when effectively implemented, AAC can support communication and language development (White et al., 2021), AAC has been deemed an exemplary practice. In *Dancing for Daddy* (Schulte & Chen, 2021), Elsie's voice was clear across multiple settings through her use of AAC.

Other communication supports represented in these books were more nuanced, requiring additional review of current research to determine the efficacy of the methodology presented. One example of a text that used unconventional communication supports included the use of facilitated communication in Cujac and Goddard's (2021) novel, *Real*. Similar to the young girl in *Dancing with Daddy* (Schulte & Chen, 2021), Charity, the 13-year-old character with ASD in *Real*, also has a clear voice throughout the book. Through the use of communication support, Charity demonstrates self-determination, and her voice is increasingly respected. However, upon closer review, it is important to note that the communication support used by Charity, facilitated communication, which involves support personnel physically assisting the communicator with typing or pointing to letters/icons. Through a systematic review of the practice of facilitated communication, researchers have been unable to verify that the person being supported is authoring the communication (Hemsley et al., 2018), and the American Speech-Hearing-Listening Association (ASHA) released a formal statement against this practice in 2018 (ASHA, 2018). However, it should be noted that this book is co-authored by a person who uses facilitated communication to reflect her personal experiences.

Sibling Relationships

The mean rating for sibling relationships was positive, and we determined that most books were positive. Many characterizations show the depth of emotions and interactions that siblings of children with disabilities often experience. Siblings showed frustration, guilt, and fear of the future, as well as pride, joy, love, and respect. Their experiences helped them to grow in maturity, insight, and loyalty. These experiences and emotions are consistent with the unique opportunities and challenges of siblings found in the literature (Meyer & Holl, 2014; Meyer & Vadasy, 2008).

Point of View

One-third of the stories are told solely from the point of view of the character with DD, and three books are voiced by the character with DD as well as another character or the third person narrator; thus, almost 38% of the stories are told -- at least in part -- from the perspective of a character with DD. Characters with disabilities who are allowed to speak for themselves demonstrate self-determination as they share their perspectives with others. This opportunity gives them agency in telling their own story and offers young readers more opportunities to develop awareness and empathy for characters with disabilities (Black & Tsumoto, 2018).

Limitations and Future Research

This study is not without limitations. First, not all reviewers evaluated each book, leading to fewer rated items in some instances, and thus, differences in the confidence bands surrounding the means for

the subscales of each book and each subscale. Second, some results are subjective (e.g., race/ethnicity) and may not accurately reflect the authors' or the illustrators' intent. Third, not all reviewers have expertise in identifying characteristics of various developmental disabilities. Since this study looks broadly at many dimensions of the books that include characters with developmental disabilities, future research could narrow the scope (e.g., by type of book, disability, inclusionary practices).

Implications for Practitioners

From the 40 books analyzed in the current study, two books were chosen as the winners of the 2020 Dolly Gray Children's Literature Award: *Dancing With Daddy* by Anitra Rowe Schulte and Ziyue Chen and *Planet Earth is Blue* by Nicole Panteleakos. *Dancing With Daddy* authentically portrays a young girl with Wolf-Hirshhorn Syndrome who uses a wheelchair for mobility, a pragmatic organization dynamic display (PODD) for communication, and a G-tube for nutrition. Despite her challenges and an unexpected snowstorm, she can enjoy the daddy-daughter dance with her father. The winner in the chapter book category, *Planet Earth is Blue*, depicts Nova, a 12-year-old girl with ASD, who is a "thinker," not a "talker," and is fascinated with outer space. Set in 1986, around the time of the NASA Challenger shuttle disaster, this is a story that evokes raw emotions related to uncertainty, loss, and hope. Although most of the books considered for the 2022 award portrayed authentic and dynamic characters who engaged in meaningful relationships with family and friends, and were educated alongside typically developing classmates, the award-winning books were deemed exemplary in all categories.

Parents, teachers, and other school professionals can use the information in Table 1 to locate these books. Data from Tables 2 and 3 can be used to select books appropriate to individual, family, or class situations, as they contain information about the character with DD (e.g., gender, race/ethnicity, disability) as well as the quality of these depictions. Also, to learn about the plot of each story, we have provided annotations to each book (see Dolly Gray Award Book Summaries). Figure 1 provides examples of discussion questions for use with some of the picture books considered in this study; Figure 2 includes discussion questions for some of the chapter books.

The Rating Scale for Quality Characterizations of Individuals with Disabilities in Children's Literature is available for those who want additional guidance in selecting quality literature that includes characters with disabilities. A simplified 1-page version of this checklist is found at this link: Checklist for Choosing Children's Books That Include Characters with Disabilities.

Conclusion

Efforts to more fully embrace spaces where diversity, equity, and inclusion are valued can be enhanced by making books available for children and youth that emulate such values. The results and resources reported in this article can be helpful to those who desire to create and enhance these spaces.

We are pleased with most of the books reviewed for this study, as many took a strengths-based approach when portraying the lived experiences of characters with developmental disabilities. However, we look forward to reviewing more books in the future that provide windows, sliding glass doors, and mirrors that more closely reflect the members of our communities with developmental disabilities.

Figure 1. *Discussion Questions for Selected Picture Books*

Picture Book 	**Discussion Questions** 
Dancing With Daddy	● Why does Elsie need to eat using a feeding tube? ● What are the different ways Elsie communicates with her family?
Different, A Great Thing to Be!	● What makes Macy different from the other kids? ● What do you love about yourself that's different from everyone else?
I Am Odd, I Am New	● Have you ever felt alone, like Benjamin feels? ● How could you help someone like Benjamin not feel so lonely?
I See, You See	● When Jonah and Maisie look up into the tree, they see a tree of cats! What things do you see when you look around you and use your imagination? ● How can you tell that Maisie loves Jonah?
I Will Dance	● Have you ever felt too shy to dance in front of someone? ● Why did Eva decide to dance, even though she was a little scared at first?
Out Into The Big Wide Lake	● What are some of the things Kate might have been afraid of when deciding to deliver the groceries to the neighbors? Why did she decide to deliver them anyway? ● What part of the story do you think Kate grew the most in?
You Are Enough	● What makes you feel like you belong in a group? ● How can you help people around you feel like they belong?

Figure 2. *Discussion Questions for Selected Chapter Books*

Chapter Book 	**Discussion Questions** 
Duck Days	● What do you think it means to have a 'duck day'? ● Have you ever felt that you were not brave enough to face problems? How did you succeed anyway?
Expect a Miracle	● How did David and his parents work together to overcome obstacles? ● Why do you think the Petrovic family decided to share David's story?
Frankie and Amelia	● Do you have a dog or cat as a pet? What would they say to you if they could talk? ● What attributes of Frankie make him a good service animal?
Planet Earth is Blue	● What challenges did Nova face while starting at a new school and living with a new family? ● Like Nova, have you ever felt misunderstood? Why do you think it was difficult for those around you to understand?
Tornado Brain	● What causes Tess, Frankie, and Colette's relationship to break up? ● How does Tess and Frankie's relationship heal?
We Could Be Heroes	● Why do Hank and Maisie want to rescue Booler? How do you think this makes Mr. Jorgensen feel? ● How is Hank "different" and not "less" than others?
When Stars Are Scattered	● How do you think Omar's efforts in school helped or would help him be a better brother to Hassan? ● How did Hassan become more independent in his community?

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Examining Biases as Educators

L. Lynn Stansberry Brusnahan
University of St. Thomas

Marcus C. Fuller
University of Vermont Eastern Shore

Elizabeth A. Harkins Monaco
William Paterson University

Martin Odima Jr.
St. Paul Public Schools

Abstract: Embedding culturally and linguistically sustaining practices in K-12 schools is dependent on educators' abilities to acquire an understanding of who they are as a socialized being and develop a deep understanding of their biases. With this knowledge as a foundation, educators can then adopt practices that create equitable and inclusive classrooms for all students, including those with autism and other developmental disabilities. This article will help educators understand two types of biases; deconstruct the impact of bias on students with autism and developmental disabilities; and utilize a cultural reciprocity model aligned to a framework and B.I.A.S. mnemonic for critical self-reflection.

An increased awareness of disparities has led to a nationwide school conversation about how biases can contribute to inequity (Chin et al., 2020). As educators, our work to decrease harmful biases requires us to understand what bias is and disrupt our unconscious biases (Nemeth & Hill, 2021). Anti-bias work is important as bias contributes to racial disparities impacting student achievement, with research convincingly showing educators treat students differently depending on their backgrounds (Dhaliwal et al., 2020; McKown & Weinstein, 2008; Okonofua et al., 2016; Rubie-Davies et al., 2006; Warikoo et al., 2016). To help understand bias, this article highlights two types of biases and deconstructs the impact of bias on students with disabilities, including students with autism and other developmental disabilities. Developing an understanding of bias is critical given that a majority of public school students today are racially diverse while most educators are white (National Center for Education Statistics, 2020). The authors then present a cultural reciprocity model (CRM) aligned to a framework and B.I.A.S. mnemonic for educators to use for critical self-reflection on biases. To engage in work focused on bias requires courageous conversations. Thus, the authors utilize a direct and purposeful approach and present the information in this article through a first-person tone (I/we/us). The authors' intent is to help us, as educators, develop an understanding of bias as we strive to meet the needs of students with autism and other developmental disabilities, including those from diverse social identities and cultures.

Society categorizes people into groups based on personal social identities and culture (Hogg, 2020). In addition to disability, our social identities can include constructs such as race, nationality, ethnicity, religion, socio economic status, language, gender, and sexual identity, but this is not a comprehensive list (Kumashiro, 2000). Culture includes the standard customs, arts, and the interactions of the socially constructed groups where we feel a sense of belonging (Dressler et al., 2018; Ellemers & Haslam, 2012; Rogoff, 2003). The literature contains many different definitions of culture, including multidimensional human activity, processes, products, and results,

both material and spiritual, transmitted from one generation to the next in a non-biological way (Mironenko & Sorokin, 2018). Simply stated, culture can be thought of as our unwritten shared understanding and meaning within which we live and the way we do things (Gruenert & Whitaker, 2015). Our social identities and culture influence our beliefs, attitudes, values, practices, expectations, and biases.

As educators, we strive to meet the needs of students through activities such as: (a) developing cultural knowledge; (b) working to understand differences; and (c) adopting culturally and linguistically sustaining practices. Developing cultural knowledge requires a two-step examination process. First, we must self-reflect and become aware of our own social identities and culture (White et al., 2018). Second, we must examine our students' social identities and culture (Altugan, 2015). After developing the awareness of personal and students' social identities and culture, we can engage in further work to understand these differences. These prerequisite steps create a foundation for adopting culturally and linguistically sustaining practices to provide equitable and inclusive experiences for all students (Gay & Kirkland, 2003; Paris & Alim, 2017), including students with autism and developmental disabilities. As part of developing an understanding of differences, we should thoroughly examine personal biases.

Bias

Bias is a preference for or against a particular group or condition (Gatewood et al., 2019) that is held by an individual, group, or institution. To understand bias, we must be able to connect with our personal identities and understand how our identities shape perspectives and influence students (Givens, 2021). As educators, we may consider ourselves open minded, egalitarian (i.e., believe all people deserve equal rights and opportunities), and justice-oriented, but we can be unaware of biases, stereotypes, and structures that impact society and students. For example, we may be unaware of how bias shapes our teaching practices (Staats et al., 2017) or how our automatic and difficult to control unconscious biases impact students.

Impact of Bias

Biases can impact a student, as a result of their social identity or culture, influencing unjust or prejudicial treatment (Romero et al., 2020; Tenenbaum & Ruck, 2007). Schools that ignore biases create toxic conditions that impact learning and have long-term, negative effects on students with disabilities, including systemic discrimination and marginalization (Chugh et al., 2005; Tenbrunsel & Messick, 2004). Numerous studies link bias with inequitable academic and behavioral outcomes (Chin et al., 2020; Dhaliwal et al., 2020; Gullo et al., 2019; McKown & Weinstein, 2008; Okonofua et al., 2016; Rubie-Davies et al., 2006; Warikoo et al., 2016). Bias can lead to academic detriments through educators' expectations, curricular bias, and student access; bias can also lead to inequitable discipline and reactions to perceived behaviors (Gullo, 2020). In schools, bias can affect: (a) an educator's beliefs about their student's successes (e.g., referrals to gifted and special education programs) (Tenenbaum & Ruck, 2007); (b) an educator's language use when addressing students (Tenenbaum & Ruck, 2007); (c) a student's ability to perform educationally (McKinney & Schaefer Whitby, 2020; Staats, et. al, 2017); and (d) long-term student outcomes as evidenced by the school-to-prison pipeline (Good & Nichols, 2001; Gullo, 2020).

Explicit and Implicit Bias. Biases can be conscious or unconscious (Romero et al.,

2020). Conscious or explicit bias are terms typically used synonymously. Conscious or explicit bias occurs when an individual **is aware** and has complete discretion over their preference for (e.g., knowingly endorse) or against something such as a particular group or condition (Gatewood et al., 2019). For example, "I prefer quiet students." or "I dislike Mondays." In contrast, unconscious or implicit bias operates at a level of automatic activation in which the individual **is not aware** of its existence (Staats et al., 2017). Implicit bias is the stereotypes and attitudes that occur unconsciously that may or may not be indicative of or reflect our actual beliefs (Gullo et al., 2019; Hinton, 2107). These biases occur through automatic cognitive associations with limited strategic control between a given social group and certain feelings (Blair et al., 2015; Warako et al., 2016). For example, when an educator recommends a student who is Asian for the gifted program and later realizes that they did not recommend a Black student who is performing academically the same.

The conditions under which educators frequently work can heighten and make unconscious bias prevalent (Warikoo et al., 2016). For example, demanding classrooms require multitasking and making quick decisions in stressful and cognitively demanding conditions with low resources and the lack of colleague support. These types of conditions can force educators to rely on reactions because they have less time to devote to cognitive resources and attenuating (i.e., reducing the force of) negative unconscious bias (Cameron et al., 2012; Olson & Fazio, 2009).

A challenge for educators is to raise bias to a conscious level. Turnbull (2016) says we need to move bias "from the back of our neck to the edge of our shoulder where they are, at least in our peripheral vision. It is a bit like having Jiminy Cricket on your shoulder tapping you on the side of the head and reminding you that you are about to be influenced by a bias" (p. 44). As educators, we want to adopt a "pause and examine before acting" stance. For example, if an educator paused and examined their unconscious bias before sending a student with a perceived behavior out of the classroom, then that educator would have the opportunity to move to a more conscious level and towards more cultural competence by self-reflecting on bias and how that bias is impacting their actions.

Schemas. Unconscious bias may not be noticed by educators because their brain receives billions of neural signals (National Institutes of Health, 2007). Cognitively, our brains filter incoming information through interpretations, experiences, preferences, and selective attention, which in turn affects our thoughts, choices, behaviors, and words in a split-second. These kinds of cognitive or brain patterns are known as schemas. Schemas can be impacted by factors, such as our social identities and culture, which can influence how we perceive others and their actions (Boutyline & Soter, 2021). Schemas can stem from stereotypes (i.e., widely held but fixed and oversimplified ideas) about certain social identities or cultures, often coming directly from previous socializations and creating behaviors unconsciously. For example, the news covers the uptick in school shootings across the nation. During our teaching, we hear a student's car backfire in the parking lot and immediately begin to feel unsafe. In this case, our brain is connecting those news stories to our current safety. So much of what educators do is unconscious. To better understand one's actions, we must engage in "persistent self-awareness, constant self-criticism, and regular self-examination" (Kendi, 2019, p. 23).

Bias in the Classroom. What does bias look like in the classroom? One common practice in the classroom is an educator might have the expectation for students to make eye contact when being spoken to. There are several reasons why this may not be appropriate. For one, eye contact does not mean that students are more likely to absorb what is being said. In fact, a student, who identifies as autistic, may tell the educator making eye contact is counterintuitive because they have difficulty modulating more than one sensory stimulus at a time and that when they make eye contact, they are not able to listen. This is also relevant to students whose cultural values and family systems have different expectations of eye contact, and it may be seen as disrespectful to look an elder in their eyes.

Unconscious bias is also often incompatible with our conscious values, or what we believe to be true and thus unconscious bias can stop educators from making inclusive decisions. Educators' inability to catch and manage blind spots represents a barrier to effectively adopting culturally and linguistically sustaining practices (Turnbull, 2016). For example, an educator might state they have high expectations and strive to meet the needs of all students. Observations, however, reveal the educator has set up their classroom based on what they believe students with autism or other developmental disabilities need - and the reality is that not every student will need the same support. If we are only relying on our experiences to make decisions about how the classroom is set, we have not looked at each individual student's needs. Another example is when an educator blames a student's disability for a challenging behavior that disrupts the learning in the classroom without first examining what else is happening in the classroom to trigger that behavior, including how the other students are behaving and the teacher's actions.

Types of Bias. There are several different types of biases highlighted in literature. This section explores two types of biases that significantly impact educational settings: affinity and attributional bias. These biases are important to explore because they capture the unconscious patterns that keep educators from being more inclusive and equitable when working with individuals whose identities, experiences, and backgrounds differ from our own.

Affinity Bias. Affinity bias captures the essence of habit and familiarity. When we gravitate toward people like ourselves in appearance, beliefs, and background, we are acting on affinity bias. Affinity bias is our "predilection to be more comfortable" around people who are more like us than different or at least share much of the same values and beliefs (Turnbull, 2016, p. 48). Some people may avoid people who are different from them. Research has found individuals who are white report few Black friends (Aberson et al., 2004; Towles-Schwen & Fazio, 2003). All educators have a predisposition towards and engage in affinity bias, regardless of social identity (e.g., race, gender) or culture; so, it is not exclusive to one type of educator (Turnbull, 2016).

Who are your closest friends? Chances are, they share some of the same social identities and culture as you. Are most of your friends the same race as you? The same gender? The same dis/ability? Even though the United States is a very diverse nation, our schools tend to be segregated, even within the same school buildings or communities. Phrases like "clique" or "crew" or "my people" are just a few ways that society acknowledges affinity bias. Walk into a school and we may see students clustered into racial groups. The

Black students are hanging out with other Black students in the hall. The Latinx youth are sitting together at lunch. The white children on the school bus are sitting together. Beverly Tatum (2017) explored this concept in the book "Why Are All the Black Kids Sitting Together in the Cafeteria?" Tatum noted that a reason students from similar racial backgrounds may gather together is that connecting with peers who are having a similar experience as their own serves as a way of affirming their identity.

Affinity bias is "one of the major barriers to inclusion of difference" (Turnbull, 2016, p. 87). Affinity bias has a real effect on the success of students who hold multiple identities because it creates a challenge for multicultural students who must cross lines and code switch (Wei, 2011). Classroom code-switching, style-shifting, situational shifting, or translanguaging refers to the alternating use of more than one style by classroom participants (e.g., teacher, students, aide) (Lin, 2017). Another way of putting it is the collection of behaviors used to access success, understanding, and status or prestige within a specific social setting. Students who hold multiple identities sometimes compare their experience to being like a "social chameleon," or trying to establish relationships with several different groups of people and conform to different identities. These students must work harder to find ways to integrate themselves into different social groups. The closer students are to a perceived norm (e.g., white, male, cisgender, heterosexual, nondisabled), the more likely they are to be imagined as more intelligent by their teachers, regardless of behavioral and academic interactions (Broderick & Leonoardo, 2016). Students who don't fit the typical mold of the dominant identity have a different experience in school. The cognitive load and added stress of feeling the need to assimilate and navigate different social structures throughout their school careers is rarely considered.

It is important to acknowledge the complexities and uniqueness of diverse social identities and culture. When students are put into specific racial and ethnic categories, they may feel like their specific identity is not being considered. For example, an educator may have preconceived notions about Asian students' however, the label "Asian" represents many regions, including China, Japan, Laos, the Philippines, and India among many others. So, if we assume that an Asian students' holds a particular belief, we are ignoring the interrelations and history between the specific regions of Asia, geopolitical histories, and the unique cultures that make up each region. Also, we are ignoring subgroups who may have migrated (not always by choice) to different regions in Asia throughout history, such as the Hmong or Karen people. When schools do attempt to include multilayered social identities and cultural considerations, they tend to segment their learning about these topics within a particular month or unit (e.g., Black history month, Hispanic heritage month, Indigenous cultures unit).

Other examples include who belongs in different school programs or communities. For instance, gifted and talented programs are predominantly made up of white and Asian students, while the most restrictive special education environments are made up of predominantly Black and Latinx students (Pearman & McGee, 2022; Shores et al., 2020). Another example is in the autism community, which is historically considered and medically diagnosed in white communities (Pearson et al., 2021). Educators may assume that students of color could not have autism because of this socialization.

When educators, schools, and districts acknowledge affinity bias and how it interrelates with social identity and culture, we are better equipped to create communities where more educators and students can competently navigate, communicate, and connect cross-culturally. Instead, too often, our schools perpetuate these biases by reinforcing social identity and cultural categories with the way (a) curriculum is taught; (b) educational programming is implemented; and (c) specialized services are delivered (Fish, 2019). These are also derived from educators' beliefs, attitudes, and expectations about students. These biases can ultimately influence educators' (a) interactions with students; (b) relationship development with students; (c) pedagogical practice decisions; and (d) curriculum and material choices.

Attribution Bias. The next type of bias that impacts inclusive and equitable treatment of difference is attribution bias. With attribution bias, perceptual errors occur when we evaluate or try to find reasons for our own and others' behaviors rather than operating as objective perceivers (Kelley, 1967). People constantly make attributions—judgements and assumptions— about why people behave in certain ways, and these may not accurately reflect reality. Our perceptual errors are biased interpretations of our social world (Funder, 1987; Nisbett & Ross, 1980).

An example of attribution bias is when a parent doesn't show up for their child's conference, the educator might attribute blame to inherent personality traits such as "that parent doesn't care" or "that parent doesn't value education" rather than a situational circumstance such as "the parent is an hourly worker and could not afford to take off of work" or "the parent does not have access to transportation to get to the school conference". A cultural attribute to explain the parent's absence could be "the parents trust the teacher as the expert in educating their child" or "the parents don't understand their role in contributing to their child's education or what it means to collaborate with educators".

In many schools, attribution bias shows up when a student's dis/ability is viewed as their single defining characteristic and generalizations are made about that student's overall character or ability. A disability label in special education is meant to provide context to the student's educational needs and entitle the student to free and appropriate educational services. If school personnel make assumptions about students with disabilities, these individuals or groups of students could more likely be "positioned as less desirable…barred access to curriculum that is engaging and accurate, pedagogy that is responsive and ingenuous, and relationships that are authentic and hopeful" (Annamma & Morrison, 2018, p. 72).

With attribution bias, educators may lower their expectations and not provide students with autism and developmental disabilities with academic opportunities, such as access to general education curriculum, because it's assumed that they can't handle the challenge or are not capable. When students are not challenged intellectually, this results in loss of learning time and access to engaging curriculum. For students with autism there is often an assumption that they are unable to socialize with others or maintain quality relationships. Students of color can be falsely imagined as less capable (Annamma & Morrison, 2018). Inaccurate narratives, such as "they can't do that," "they won't participate," "they won't be able to understand," or "they can't read," completely removes students from opportunities. With these assumptions, students may not be seen as capable of participating in a school science

fair, academic or extracurricular clubs, and even general education instruction such as reading, writing, or math. All children can learn; students with autism and other developmental disabilities just might need more time or intensive instruction to acquire certain skills (Spooner & Browder, 2015).

Attribution bias often shows up in false assumptions, based on a student's social identities, culture, language, background, experiences, ideas, and belief systems. Instead of seeing these as assets and strengths, some educators may view these attributes as part of the root cause of a student's struggle at school. For example, some educators may attribute the struggles of students from low-income families to their "traumatic homelife". Educators may not consider the traumatization that occurs in school settings. For example, a Black student may experience trauma as a result of racist curriculum, teaching practices, or negative social interactions. Attribution bias dynamics can erode and have a negative impact on a child's educational experience and the relationships between students and educators in schools.

Microaggressions. It is important for us, as educators, to self-reflect because if personal bias remains in an unconscious state, microaggressions can occur. Simply defined, microaggressions can be a comment or action that is subtly and often unintentionally demeaning to a member of a marginalized group. More specifically, microaggressions can be defined as covert intentional or unintentional ways that express racism, discrimination, invalidation, and insensitivity to students (Sue et al., 2009). Color-blind attitudes and statements such as "I don't see color," "You don't look Black," "You speak English very well," or "You don't have an accent" may not seem outwardly hostile, but they deny, devalue, insult, and harm the students to whom they are directed (Sue et al., 2007). Researchers have found that daily experience of microaggressions demonstrates a more significant influence on self-esteem than traditional forms of racism (Sue et al., 2007; 2009). This article presents three forms of microaggressions (Sue, 2010):

- Microassault: communications, verbal or nonverbal, that can include explicit derogation, name-calling, avoidant behavior, and purposeful discriminatory actions
- Microinsult: communications that convey rudeness and insensitivity, demean a person's heritage or identity, and can include subtle snubs and hidden insulting messages
- Microinvalidation: communications that exclude, negate, or nullify the psychological thoughts, feelings, or experiential reality of a person belonging to a particular group

To an outsider, microaggressions - and therefore implicit biases - may be evident, but the individual holding this bias may not realize or be doing so intentionally. Telling a Latinx student that they are going to love the red beans and rice that will be served at lunch today may seem like a way to build rapport with that student but perpetuates cultural stereotypes and creates an unwelcoming environment.

Status. Another concept educators should be aware of is "master status" or "identity first", which is the defining identity we most relate to when trying to express ourselves to others (Crossman, 2019). The concept of "status" is when individuals unconsciously develop expectations for the performances of themselves and others, based on their social identities and culture (Berger et al., 2017). For example, a student who feels that their role as an individual with autism is important to be recognized, maybe even more important

than their other social identities (e.g., male, son, student), may self label themself as autistic because they identify most with that identity and with other individuals who also have autism. Some of us might consider our occupation as our master status. For example, a teacher may relate to being an educator as the most important part of their identity even more so than being a woman or mother. Our status dominates our perceptions (i.e., biases) and affects how we behave towards others and how others behave with respect to us.

Master status can also be ascribed to individuals by others, which typically looks like the tendency to place more emphasis on one social identity or culture, such as skin color, dis/ability, or sexual orientation, as being more significant than any other aspect of an individual (Hughes, 1963). This can be conferred on an individual subconsciously by others, but sometimes it is a conscious effort to distinguish the identity of that person from others through a specific quality. For example, another educator tells you they have a Black doctor, or they had fun last night going out with their gay friend. How often have you talked about going to your white doctor or hanging out with your straight friend?

Assessment

Educators cannot address biases if they don't know they have them. Project Implicit at Harvard hosts the Implicit Association Test (IAT) online to assess implicit bias (Greenwald et al., 1998; Maina et al., 2018) on several social identities and cultures. This assessment presents an image or word and asks the test taker to assign or pair associated items. Test takers are presented a series of images (e.g., African American and European American faces) and words on screen. This assessment measures the strengths of associations between concepts (e.g., gay, Black), evaluations (e.g., bad, good), and stereotypes (e.g., clumsy, athletic). Over the approximately 10-minute duration of the testing, the assessment times how long it takes the test taker to pair concepts by measuring the time from when the image or word is displayed to when it is categorized. Some scholars have questioned the validity of this assessment because it measures the reaction time to pair two concepts and thus cannot be solely affiliated with bias (Gonzalez et al., 2014). The purpose of the project is to educate and raise awareness of how implicit bias may affect our decisions and instinctive reactions, and to encourage self-reflection.

Cultural Reciprocity Model Aligned to B.I.A.S. Framework

A strategy that has been beneficial to minimize bias in an educational setting is for educators to incorporate the use of a cultural reciprocity model (CRM) when working with students, families, and others. CRM is a framework used to examine values, beliefs, and assumptions linked to social identities and culture (Kalyanpur & Harry, 1999). Many times, educator's conversations with students and their families about their social identities and culture are difficult; and while important, we may shy away from these hard topics and conversations. The CRM provides a 4-step framework to navigate these types of conversations and affirm or adjust the values, beliefs, and assumptions we may have about another's social identities or culture. Figure 1 guides educators through each step of the CRM framework by aligning self-reflection questions to a B.I.A.S. mnemonic (begin, investigate, acquire, and strategize). This framework presents concepts and questions to help educators *begin* to examine personal and students' social identities and culture, *investigate* and acknowledge personal and school wide bias, *acquire* knowledge to disrupt bias and inequitable educational practices, and *strategize* putting the acquired

knowledge into practice to act, create change, and combat bias.

CRM Step 1. To *begin* the first step of CRM, we identify our social identities and culture through critical self-examination. See Figure 1 for questions that prompt critical reflection and accompany the CRM framework. A question to start with is "What are my personal social identities and culture?" We label and identify ascribed social identities and cultures to help us understand where our values, beliefs, and assumptions (i.e., things accepted as true without proof) about dis/ability, social identities, and culture stem from. We need to consider how we acquired any ableist (i.e., belief that nondisabled status is superior) and/or racist (i.e., prejudice against racial or ethnic groups) attitudes. In this step, we *investigate* and acknowledge personal and school wide bias and critically examine the role biases play in perpetuating inequities within schools. We *acquire* information on our own identities to help us acknowledge our personal bias and its influence on education. Critical reflection can lead to dissonance of who we think we are as a person or within the classroom (e.g. "I can't be racist, I'm a Christian and have Black friends."). One *strategy* to use during this self-examination is to think of these prompts as a way to identify behaviors we want to change and then continue through the CRM steps to help create a behavior plan for ourselves to become more culturally competent.

CRM Step 2. The next CRM step requires us to meet with collaborators to further examine social identities and culture. The term collaborators are used broadly to include individuals that have an invested interest in the students and knowledge of their social identities and culture. Collaborators could include family and friends, community members, other school personnel (e.g., teachers, administrators), and the students themselves (as appropriate). To *begin* this step of reflection, examine students' and collaborators' social identities and culture. Then, identify shared values, beliefs, and assumptions. Answer questions and self-reflect as part of the *investigation* and collaboration that takes place during this CRM step. When meeting with collaborators, communicate that their advice and input is important to the successful planning and programing for the student. Educators may need to explicitly state and restate this point multiple times, due to many traditional social identities and cultures respecting educators' authority and being unwilling to speak up even when having vital information (Chen, 2022). During this step, *acquire* knowledge to disrupt bias and inequitable educational practices. An important question to ask when identifying personal social identities and culture is "How do my values, beliefs, and assumptions about students infiltrate into my teaching practices or serve as a barrier to a student demonstrating their abilities and learning?" These types of questions can help educators *strategize* how we can use the identification and established understanding of our own social identities and culture, as well as the values, beliefs, and assumptions we may have about the social identities and cultures represented by our students to disrupt bias and inequitable educational practices.

CRM Step 3. To reach cultural competence (Cross, 1989) with a person of another social identity or culture, educators need to "lean into" these hard discussions and consider the differences, and the reasonings for these differences. In step three, we discuss cultural differences and adjust cultural assumptions. To *begin* this step, engage in courageous conversations and adjust assumptions to better combat any affinity and attribution biases we carry. In this step, share identified

values, beliefs, and assumptions, based on social identities and culture, with the collaborators. Dive deeper into *investigation* by discussing questions such as: "How might our differences serve as barriers to optimal teaching and learning?" In this step, *acquire* knowledge through questions such as "How do my student's multiple identities intersect and shape the experiences of their lives and impact their success in the classroom?" *Strategize* by asking questions such as "How can I work with collaborators and other cultural informants (e.g., colleagues, students, and parents who are self-aware and understand nuances of their cultural values, norms, and behaviors and are willing to express this knowledge to those who seek more information) to help me grow and ensure equitable practices?"

CRM Step 4. To *begin* the final step, engage in continuous reflection and *investigation* with the collaborators. Utilize the *acquired* understanding of social identities and culture and learn about the barriers and prejudices students may face due to their intersecting identities. Step four requires educators to collaborate to determine effective *strategies* to incorporate other's social identities and culture into planning and combat assumptions. The B.I.A.S. questions highlighted in this stage causes educators to look across the social ecological systems of the Bronfenbrenner's ecological framework for human development (Paat, 2013). The questions in the framework prompt educators to *begin, acquire, investigate,* and *strategize* with the knowledge gained through implementing the CRM to look at school wide, district-wide, and even state-wide practices and see how they may negatively impact vulnerable and marginalized populations (i.e. students with multiple social identities).

During the last step of the CRM, there are several questions outlined in Figure 1 that help educators operationalize the knowledge they've learned. For example, a school had a professional development session that focused on challenging inequitable practices through a school-wide culturally and linguistically sustaining practices walkthrough implemented by the school's leadership team. One issue the team identified was that many of the school's visuals to teach, model, and reinforce expected behavior and non-expected behavior was through the lens of colors. Red was associated with non-expected behaviors and concepts such as stop, danger, and unregulated behaviors and green was associated with expected behaviors such as go, safe, and calm. This situation could be problematic to a student where the perception or representation of colors was different between school and their family culture. The "color red is used to signal loss, failure, bad, danger in the American culture, whereas red is used to signal happiness or prosperity in the Chinese culture" (Tham et. al., 2020). The educators at this school select a question from CRM 4 to explore this issue further: "How do the school's policies affect various disabilities, social identities, and cultures?" In this example, school staff could have a discussion acknowledging how the ways they communicate through visuals could have cultural associations that are specific to geographical region, country, or cultural groups represented by the students of the school. Using the CRM process, educators acknowledge the beliefs and assumptions they have about colors and then make considerations that scrutinize the communication systems and symbols that uphold the status quo in schools. We need to ask questions to help identify and adjust practices that may potentially impact a student's learning. See Figure 1 for more questions from the CRM framework.

Figure 1. *Cultural Reciprocity Model B.I.A.S. Prompts*

CRM Step 1 Identify your own social identity and cultural values, beliefs, and assumptions.	**B** *Begin to examine* ● What are ways I can engage in critical self-reflection, be vulnerable, and examine my social identities and cultural values, beliefs, and assumptions?
	I *Investigate and acknowledge bias* ● What are my personal social identities and culture? ● How do I acknowledge personal and school wide bias? ● What are my acquired values, beliefs, and assumptions? ● How did I learn or acquire ableist and/or racist attitudes? ● What role have biases played in perpetuating inequities within schools? ● How does examining my own social identities and culture help me identify and acknowledge my personal bias and its influence on education?
	A *Acquire knowledge to disrupt bias and inequitable educational practices* ● How can I use acquired knowledge to disrupt bias and inequitable educational practices?
	S *Strategize putting the knowledge into practice and combat bias.* ● How can I strategize and put acquired knowledge into practice to take action and create personal change?
CRM Step 2 Meet with collaborators to see if they share your values, beliefs, and assumptions based on social identities and culture.	**B** ● What are some ways I can learn about others' (e.g., collaborators and students) social identities and culture?
	I ● What are my students' and collaborators (e.g., teachers, administrators) social identities and culture? ● How are our social identities and cultures similar and different? ● What are our commonalities that can serve to unite us rather than divide us? ● What can I learn from collaborators to help me acknowledge my personal and school wide bias?
	A ● What knowledge and experiences, based on ability, social identities, and culture have students encountered that have had a significant impact on their lives? ● How can I acquire knowledge of my students' disability, social identities, and culture to disrupt my values, beliefs, and assumptions and impact students' success in the classroom? ● How do my values, beliefs, and assumptions about students infiltrate into my teaching practices or serve as a barrier to a student demonstrating their abilities and learning?
	S ● How can I strategize and put acquired knowledge into practice to take action based on what I learn?
CRM Step 3	**B** ● How can I examine social identity and cultural differences?
	I ● How might differences serve as barriers to optimal teaching and learning?

Discuss social identity and cultural differences and adjust values, beliefs, and assumptions.	**A**	● How do my student's multiple identities intersect and shape the experiences of their lives and impact their success in the classroom? ● Am I mindful of my unconscious bias and blind spots?
	S	● How can I work with collaborators and cultural informants to help me grow and ensure equitable practices? ● How can I adjust values, beliefs, and assumptions based on social identities and culture?
CRM Step 4 Collaborate to determine effective ways to incorporate other's social identities and culture into planning and combat assumptions.	**B**	● How can I combat values, beliefs, and assumptions and collaborate to incorporate students' social identities and culture into my classroom in effective ways?
	I	● How does my school reproduce disparities in student outcomes based on ability, social identity, and cultural biases? ● What disabilities, social identities, and culture is my school considering in planning and implementation? ● How do the school's policies and behavioral strategies affect various disabilities, social identities, and cultures?
	A	● How can I gain cultural competence and create opportunities, contexts, and conditions that allow students to demonstrate their abilities? ● Does my curriculum, materials, and teaching methods demonstrate representation of diverse abilities, social identities, and cultures to provide students equitable opportunities to learn?
	S	● How can I combine culturally and linguistically sustaining practices, pedagogy with a cultural focus, and inclusive practices to ensure that all students can meaningfully participate in equitable ways? ● How can I take a stand against injustice and be an ally by harnessing my positionality and privilege to expand access and ensure equity for students with marginalized identities who experience bias in schools? ● How can I create a classroom and school environment based on respect that disrupts current inequities? ● How can I implement, model, and advocate for culturally and linguistically sustaining practices within my classroom and school environment?

(Adapted from Odima & Stansberry Brusnahan, 2021; Smith et al., 2021).

Conclusion

To adopt culturally and linguistically sustaining practices, we must examine our identities and biases regularly so we can empower all students socially, emotionally, and intellectually by using the student's identities to impart knowledge and skills (Ladson-Billings, 2006; Schaefer Whitby et al., 2021). After we understand who we are as a socialized being, we can then engage in learning about our biases and how these biases affect our practices as educators. It can be emotionally exhausting to lean into our biases, but we cannot let the fact that this is hard work stop us from engaging in it. Unconscious bias operates in so "many subtle and insidious ways that it is way too easy to keep it alive and functioning" (Turnbull, 2016, p. 92).

> Overcoming our unconscious biases can leave you feeling like a hamster on a wheel, constantly having to revisit the same situations. Will it ever improve? Unconscious bias will not go away. So, if it is never going away, what is the point? The answer is we need to create a culture, where it is acceptable for people to call out bias when we see or hear it happening. (Turnbull, 2016, p. 54).

Once we have deepened our understanding of biases, we can then challenge our judgmental perspectives and question our understanding, values, beliefs, assumptions, and practices of how to be an effective educator and meet the needs of our diverse students, including those with autism and other developmental disabilities, through a CRM framework.

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Correspondence concerning this article should be addressed to L. Lynn Stansberry Brusnahan, 1000 LaSalle Ave., MOH 217, Minneapolis, MN 55403. E-mail: llstansberry@stthomas.edu

Using Electronic Literacy-Based Behavioral Interventions to Teach Employability Skills to College Students with Intellectual and Developmental Disabilities

Kelly B. Kearney
Florida Atlantic University

Ayse Torres
Florida Atlantic University

Abstract: Employability skills, such as successfully completing a job interview, are needed by individuals with intellectual and developmental disabilities to obtain, and maintain, integrated employment. Since the COVID-19 pandemic, employment processes, such as job interviewing, have shifted to more flexible and remote options. However, this makes direct teaching of the skill even more complicated. This article describes the use of electronic literacy-based behavioral interventions as an intervention to teach employability skills, such as job interviewing. A vignette was created to demonstrate how an electronic literacy based behavioral intervention can be produced and used in the classroom.

Miss Wright is a third-year transition teacher in a public high school. She is a licensed special education teacher assigned to teach pre-employment skills and provide transition services and resources to high-school students with disabilities, their parents, and other teachers in the school. She always looks for new ways to help her students learn job readiness skills and other life skills needed to succeed. To keep herself up-to-date with the current job market and her students' needs and challenges in obtaining and maintaining jobs, she regularly meets with her students, their parents, and prospective employers. Based on the feedback received, she enhances her teaching methods and updates her resources. During the COVID-19 pandemic, she did her best to continue teaching employability skills to her students in a virtual platform. However, the standard curriculum followed and teaching methods utilized were all designed to teach targeted skills in face-to-face settings. Even though classes are now in-person again, the 'world of work' is not the same, therefore, Miss Wright is well aware that she needs to adapt her teaching tools and resources to better navigate the changing practices in employment.

Recently, students and their parents have been making comments about how the online job interviewing process replaced the in-person interviews. The main reason for this change is because online interviews are convenient and are also time- and cost-effective. Furthermore, online interviews speed up the hiring process and allow employers to interview more candidates in shorter time frames. In a recent career exhibition, Miss Wright heard that "virtual interviews are not going away"; a combination of the two interviewing methods, online and in-person, will be the way recruiting will be done post-pandemic.

Considering the changing trends in recruiting, Miss Wright decided to teach her students online job interviewing. Initially she thought that role playing would be an effective method to teach this skill. To test this idea, she worked with five students with intellectual and developmental disabilities (IDD) who will be transitioning from high school to post-high school in the next few

years. She met one student at a time, virtually, and role-played a job interview. After about seven meetings, the students were still not able to greet her appropriately and remained silent after questions were asked. She observed that students were distracted. In a few instances, they were trying to get help from others present in the room with them. With this trial, Miss Wright confirmed online job interviewing is not a skill that can be developed naturally or adapted easily; this is a skill that requires targeted, systematic instruction to learn. So, the question present in Miss Wright's mind is: "Is there a systematic tool to teach virtual job interviewing skills?"

Successfully navigating a job interview is an important first step in demonstrating the ability to gain employment (Lindsay & DePape, 2015). Interviewing for employment is an anxiety provoking situation for individuals with or without disabilities. Job interviewing can be a major obstacle to gaining employment due to challenges with self-advocacy and social skills (Brooks et al., 2015; Shogren et al., 2017). In addition, conversational and behavioral fluencies are often difficult for individuals with IDD to attain in natural environments (Hawkins, 2004; Walker et al., 2016).

A successful interview requires training and development of key skills such as communication skills, self-advocacy skills, and decision making skills. Transition programs, designed to teach high school students the skills they need to obtain employment after high school, have used many approaches to teach interviewing skills, including role-playing, community based instruction, and scripting (Bachali & Ozen, 2019; Hayes et al., 2015). However, these activities involve dynamic face-to-face interactions (Downey et al., 2021). In virtual formats, technology-aided instruction for individuals with IDD demonstrated positive outcomes (Burke et al., 2021). For example, interactive virtual-reality job interview practice using a virtual training agent improved interviewing skills of young adults with autism spectrum disorder (ASD) and other developmental disabilities (Burke et al., 2018). Similarly, a role-play-based guidance system for job interviews, using an android robot resembling a real person has been effective in teaching job interview skills for individuals with ASD (Kumazaki et al., 2019). However, these interventions require high-tech devices or virtual reality software that are not freely available for professionals to use.

Two recent studies utilized a cost effective, easy-to-use remote intervention called an electronic literacy-based behavioral intervention (E-LBBI) to teach job interviewing skills. Both studies implemented this method in virtual settings. The first study involved three young adults with IDD who first received an in-person LBBI, and then an E-LBBI. The study results showed that all three students mastered job interviewing skills with 100% accuracy and maintained the acquired skills after the intervention was removed. This study was the first to show that E-LBBI is an effective tool to teach and practice job interviewing skills in a virtual setting (Torres et al., 2021).

The second study sought to improve the virtual job interviewing skills of individuals with IDD who attended an inclusive postsecondary education program in preparation for competitive community employment. The students were taught virtual job interviewing skills using a customized E-LBBI, specially designed by the students to showcase their strengths and preferences. The study results also indicated that E-LBBIs were effective for teaching and maintaining virtual job interview skills, and

would generalize across novel employers (Downey et al., 2021).

What are LBBIs and What Do They Look Like in a Virtual World?

LBBI is an umbrella term for interventions that use social narratives (Collet-Klingenberg & Franzone, 2008), comic strips (Daly & Ranalli, 2003), social scripts (Krantz & McClannahan, 1998), and picture activity schedule books (Spriggs et al., 2007). LBBIs are comprised of a task analysis of the skill, pairing each step in the task analysis to a single page with a matching picture and a short, simple sentence. The facilitator of the LBBI uses a *pause-point-practice-praise* technique. The facilitator asks the learner to pause after reading the sentence on the page, point to the picture, practice the behavior in the picture, and then provides praise to the learner. Traditionally, if the learner makes an error, the facilitator refers the learner back to the storybook to re-read the step (Torres et al., 2021).

LBBIs can be delivered face-to-face as a tabletop storybook (Kearney et al., 2018), or virtually using a video conference platform (Downey et al., 2021). Job coaches, teachers, employment specialists, and peers can integrate this intervention into their practice effectively with minimal training (Torres et al., 2021). LBBIs have been used to teach a wide range of skills to individuals with IDD such as safety skills (Kearney et al., 2018), independent living skills (Brady, Hall et al., 2016), adaptive daily living skills and routines (Brady, Honsberger et al., 2016), and self-regulation skills (Hall Pistorio et al., 2019). In regards to vocational skills, LBBIs have been used to teach employment skills to transition-aged youth and adults (Bucholz et al., 2008; Hall Pistorio et al., 2018, 2021; Honsberger et al., 2019) as well as job interviewing skills to adults with IDD (Downey et al., 2021; Torres et al, 2021).

Electronic LBBIs

An E-LBBI is essentially an e-book that can be created using Microsoft PowerPoint. All sessions can be conducted using a video conferencing platform such as Zoom, Microsoft Teams, or Cisco WebEx. For a successful learning process during LBBI implementation, the facilitator should make sure that students know how to use the virtual platform selected prior to beginning the intervention. Limiting distractions and preventing potential assistance for students (such as a parent in the same room) are critical. Both facilitator and the students must have reliable internet connection for an effective teaching process.

Prior to the COVID-19 pandemic, the vast majority of LBBIs were provided as table-top storybooks. However, recent research has shown the E-LBBIs are just as effective as table-top storybook LBBIs and can be delivered using student-friendly mediums such as tablets or laptops (Downey et al., 2021; Hall Pistorio et al., 2018; Torres et al., 2021). Pairing E-LBBIs with tablets and laptops actually make the intervention more accessible and desirable to students (Mechling, 2008; Mechling et al., 2014). One research team found that skill acquisition may actually occur more effectively when learners use an E-LBBI compared to a table-top storybook LBBI (Hall Pistorio et al., 2018).

To deliver the LBBI, the facilitator shares the E-LBBI with the student through the screen share function. Then, the facilitator reads the slides for each step in the task analysis, one by one, prompting the student to repeat and read each slide afterward. Next, the student rehearses the steps independently after the facilitator reads each particular slide. The facilitator asks the students to pause after reading the sentence on the page, point to the picture, practice the behavior in the picture,

and then provides praise. See Figure 1 for the *pause, point, practice, praise* technique. If a student makes an error, the facilitator refers the student back to the story to reread the step. Each session can last between 5 and 7 minutes. The E-LBBI, when loaded onto a tablet or emailed to the student, serves as a type of training manual. It is something the student can refer back to when needed, further empowering the student and promoting independence (Kearney & Hall Pistorio,2021).

How to Create an Electronic LBBI

Step 1: Create a Task Analysis

During a review of recent articles in special education practitioner journals, Miss Wright came upon E-LBBIs. She thought the idea of a skill handbook that could be loaded onto a tablet would work really well for her students. She also liked that she could implement the E-LBBI with the students, and then their job coach and/or parents could also implement it with them, ensuring additional practice in multiple locations with different people. She created a task analysis of the employability skill she wanted to work on – job interviewing. The task analysis went through the job interviewing process, step-by-step, starting with an appropriate greeting, answering commonly asked questions, and ending with a suitable closing statement. She tailored the task analysis to have answers specifically for the student, Suzy Smith.

Construct a task analysis by identifying each step, in sequence, needed to complete the employability skill. For a job interview, this might include components such as greeting the interviewer, answering questions appropriately, and ending the social interaction properly. A task analysis breaks a complicated skill into smaller, more manageable pieces. The task analysis can be tailored to individual students. For example, the teacher can customize the E-LBBI to prepare the student to talk about the computer skills and organizational skills she has when the interviewer asks "why should we hire you for this job?". See Table 1 for a sample job interviewing E-LBBI layout.

Step 2: Create the E-LBBI

Once Miss Wright created the task analysis, she had to transform it into an E-LBBI. She did this by pairing each step in the task analysis with an accompanying photograph she took on her phone from the student's point of view. She put each task analysis step and the matching picture on an individual slide in Microsoft PowerPoint. She also added a title page to the PowerPoint, naming the skill and the student she had made this individualized E-LBBI for.

Determine which software you'd like to use to create the E-LBBI. Microsoft Word and PowerPoint are frequently used. Write each step of the task analysis in a short and simple sentence that is easily understood by the targeted learner. Then, pair a picture for each step in the task analysis with the accompanying sentence. The pictures can be found through an online search or they could be photographs taken from the learner's point of view. The learner can even pick their own picture or take their own photographs, increasing their sense of ownership over the intervention (Downey et al., 2021). See Figure 2 for a sample E-LBBI slide.

Step 3: Choose Presentation Method

Miss Wright's class was already familiar with Microsoft Teams since this was the software that the school used for remote teaching during the COVID-19 pandemic. She knew this was a popular platform for many companies and decided to use Teams to present the E-LBBI to Suzy Smith.

Figure 1. *Pause, Point, Practice, Praise Technique*

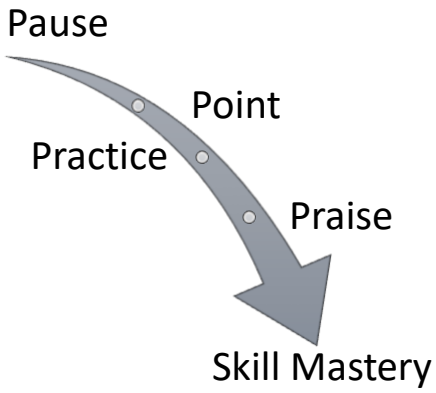

Table 1. *Sample E-LBBI for Virtual Job Interview*

Page number	**Text and illustrations**
Title page	Virtual Job Interview for Suzy Smith.
Page 1	As soon as I connect to the interviewer, I keep eye contact and say "Hello". [picture of the interviewer on the screen from the student's point of view]
Page 2	The interviewer will say: "Tell me about yourself." [picture of the interviewer on the screen from the student's point of view]
Page 3	I say "My name is Suzy Smith." [picture of Suzy Smith]
Page 4	I say "I live in the city of _____." [picture of city where Suzy lives]
Page 5	I say "I am a student at _____." [picture of school that Suzy attends]
Page 6	The interviewer will ask: "Why should we hire you?" [picture of the interviewer on the screen from the student's point of view]
Page 7	I say "I am good at _____." [picture matching what student is good at]
Page 8	The interviewer will ask: "What are your professional skills?" [picture of the interviewer on the screen from the student's point of view]
Page 9	I say "I have _____ skills." [picture matching what student skills]
Page 10	The interviewer will ask: "Do you have any questions?" [picture of the interviewer on the screen from the student's point of view]
Page 11	I say ""Yes, when will I hear from you?" [picture of Suzy Smith]
Page 12	I listen and provide an eye contact. [picture of the interviewer on the screen from the student's point of view]
Page 13	The interviewer will say: "Thank you for interviewing today." [picture of the interviewer on the screen from the student's point of view]
Page 14	I say: "Thank you, goodbye." [picture of Suzy Smith]
Page 15	I click the LEAVE button. [picture for LEAVE button on the platform]

Figure 2. *Sample Page from E-LBBI*

Select a presentation method based on the targeted learner's prior knowledge. Zoom is a commonly used web-based videoconferencing application, but if the learner has never used it before then it may not be a good fit for an E-LBBI. Google Meet, Microsoft Teams, and Cisco WebEx are also viable presentation tools that could be used to share an E-LBBI with a learner. Using a program that the learner is already familiar with increases the impact of the E-LBBI.

Step 4: Choose Who Will Teach Skill

Once Miss Wright finished creating the E-LBBI, she considered who would implement it with the student. She decided she might get more buy-in from the student if a peer in another classroom implemented the E-LBBI. She had read about the success of peer-mediated LBBIs and knew that Suzy Smith really enjoyed interacting with peers. She trained the peer student for two days, each training session lasting about 20 minutes. The peer was able to perform each step in the pause-point-practice-praise strategy with 100% fidelity after just two sessions. Miss Wright also decided to train the classroom job coach on the implementation of the E-LBBI, programming for generalization across people.

Identify who will teach the skill presented in the E-LBBI. Employability skills have historically been taught through E-LBBIs by job coaches and educators (Downey et al., 2021; Torres et al., 2021), however tabletop LBBIs have been used to teach employability skills and were successfully mediated by peers (Honsberger et al., 2019). There are many factors in determining the best mediator for this intervention, such as scheduling, availability, generalizability, and interest level.

Step 5: Teach the Skill

All the pieces were in place! The E-LBBI was created, the presentation mode was

determined, and the peer and job coach were trained. It was time to teach the skill! Miss Wright was pleasantly surprised when Suzy Smith mastered the skill after just six sessions with the E-LBBI. She started teaching Suzy how to use different platforms (like Zoom and WebEx) and probed the skill on the different platforms to check for generalization and maintenance. She also decided to modify the E-LBBI a bit in order to customize it for a new student. She changed a few of the pictures and wording in the task analysis and introduced the E-LBBI handbook to a second student. Miss Wright was excited about the flexibility of this intervention and began thinking of other employability skills she could use it with.

Time to teach! Once the E-LBBI has been created, the interventionist is trained, and the presentation method is chosen, it's time to begin teaching the employability skill. This is the fun part!

Conclusion

E-LBBIs, like any other intervention, have limitations. The studies that have explored using E-LBBIs for interview prep have not explored other important factors that may impact the interview process, such as personal grooming, attire, or punctuality, and this is something future researchers should investigate (Torres et al., 2021). E-LBBIs should be used with students and staff that have reliable Internet service in settings with minimal distractions (Downey et al., 2021). So far, researchers have only explored the use of E-LBBIs with transition-aged students who are diagnosed with IDD. More research is needed to determine if this intervention is effective with a wider range of students. Despite these limitations, researchers have demonstrated that E-LBBIs can be used to teach transition-aged students employability skills, such as job interviewing. E-LBBIs can be shared through video conferencing applications by classroom teachers, job coaches, parents, and even peers. Practicing employability skills with E-LBBIs will help transition-aged students practice the skills they need to be successful in an increasingly technology-driven world of work.

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Correspondence concerning this article should be addressed to Kelly B. Kearney, Florida Atlantic University, Department of Exceptional Student Education, 777 Glades Road, Boca Raton, FL 33431. E-mail: KBrown65@fau.edu

Include All of Me:
Intersectionality in Sexuality Education for Students with Disabilities

Christine R. Scholma
Trinity Christian College

Ruth M. Eyres
Henderson State University

Victoria Slocum
Asbury University

Elizabeth A. Harkins Monaco
William Paterson University

Abstract: Sexuality education for students with intellectual and developmental disabilities and autism is fraught with challenges, including confusion of the role of sexuality educator, delayed education, and a one size fits all approach. Because students with disabilities have multifaceted, intersectional identities, it is important that sexuality education includes representation of the whole person. For this study, current literature about intersectionality and sexuality education was examined to determine how to support students' intersectional identities in sexuality planning, instruction, and implementation. Although there are few resources specifically targeting sexuality instruction for students with disabilities, it is important to choose curricula that represent a variety of ways that students may identify, including multiple, intersectional identities. This research includes a review of sexuality education resources and curricula from an intersectional perspective to assist in selecting materials that will represent various aspects of a student's identity.

Disability history comprises a grim reality of academic, social, and cultural marginalization, leading to the reality of seemingly safe spaces, such as schools, to become unsafe spaces of victimization (Loutzenheiser & Erevelles, 2019). Often, in school settings, students with disabilities are viewed by teachers and peers without disabilities only by one aspect of a complex identity: disability. Kimberlé Crenshaw's (1989) framework of intersectionality highlights the complexity of the human experience and the interaction between multiple facets of one's identity. Because a student may experience privilege in some areas and multiple layers of oppression in others, it is important to respect the full student experience by teaching with an intersectional framework in mind. One critical area of education, often lacking in robust content and comprehensive implementation for students with disabilities, is sexuality education. Hampered by ableist perspectives, students can experience an absence of or delayed education on sexuality, affecting their ability to develop agency and autonomy sexually. Additionally, a lack of sexuality education increases the already elevated chances of abuse, mental health problems, and health complications (Manoj & Suja, 2018).

Few sexuality education resources exist that specifically support the diverse needs of learners with disabilities, leading to a sexuality education that is often deprived of fact-based information about body development, sexual activities, and the results of sexual behavior, including abuse, pregnancy, and sexually transmitted diseases (Manoj & Suga, 2018). Of these resources with targeted supports for students with disabilities, many do not take an intersectional approach. When sexuality

education does not acknowledge the intersectional identities of students, key elements of the human experience are denied, affecting holistic development. As students with disabilities, who may be experiencing multiple areas of marginalization and oppression, it is important to support students' multiple identities when implementing sexuality education. This literature, curriculum, and resource review examines sexuality education from an intersectional perspective and provides recommendations for a collaborative approach to implementation that supports holistic development.

Social Identity Theory and Intersectionality

Social psychologist Henry Tajfel (1978) studied what happens when perceptions, judgements, and behaviors are shared between groups of people by connecting 1) cognitive grouping – "where cognitive categories lead to the increased salience of distinguishing features between categories, exaggerating category differences" (Islam, 2014, p. 1781) – with 2) gestalt phenomena – where the whole of anything is greater than its parts (Hogg & Williams, 2000). In other words, he claimed that groups of individuals divide themselves into the categories "us" and "them" through a process of social categorization and connection, i.e., people interact and assign themselves into social groups based on personal social identities, or constructs, and lived experiences. Social constructs include but are not limited to disability, race, ethnicity, religion, socio-economic class, language, gender, and sexual identity (Kumashiro, 2000). For example, someone who is gay is likely to connect closely with other individuals who are gay based on similar lived experiences. Tajfel (1978) coined this as social identity theory (SIT; Tajfel, 1978; Tajfel & Turner, 1979), "a collective, depersonalized [self-]identity based on group membership" and "imbued with positive aspect" (Islam, 2014, p. 1781).

SIT claims that group membership reinforces individuals' biases towards and preferences for their personal social group(s). Once connected to a social group, individuals develop intrinsic senses of belonging through 1) strong emotional ties, 2) social protection, and 3) increased self-identity (Tajfel, 1979). SIT also recognizes that people will exaggerate the ways they are different than other groups (Islam, 2014), which reinforces inequalities between them (Kumashiro, 2000). These structures of social power give more power to the groups who are considered 'dominant' (Causadia & Umana-Taylor, 2018) because they directly impact how people think, interact, and feel. Ultimately this means that those who ascribe to non-dominant social identity groups stay oppressed, marginalized, excluded, or isolated from mainstream societal benefits, such as access to equal wealth, education, or legal protections. For example, heterosexual couples are considered part of the dominant social group because they are entitled to equitable legal marriage rights and privileges across the United States, and LGBTQI+ couples are not (Moreau, 2020).

Imagine the social impact of belonging to two or more non-dominant groups. Crenshaw's (1989) work around intersectionality specifically addresses how multiple overlapping social identities impact and oppress certain populations through their lived experiences. It is injustice squared – an increased amount of discrimination, prejudice, bias, or stereotyping, due to the combination of their nondominant social identities. For example, when an individual identifies as LGBTQI+ and disabled, they are more likely to experience homophobia and ableism at the same time. These kinds of examples are found among many kinds of

social constructs, but this article will focus on disability, gender, sexuality, culture, and religion.

The Multidimensionality of Disability

Critical disability theory (CDT), or DisCrit, is a theoretical framework based upon the work of Disability Studies and Critical Race Theory (Annama, Connor, & Ferri, 2016a). It frames disability through the lens and influence of social considerations, that the intersection of disability and other identities has compounding effects on disabled individuals (Annamma et al., 2013). CDT says social environments, societal expectations, and social norms affect how individuals with disabilities perceive themselves, how society perceives them, and how these perceptions interact to create and reinforce societal rules. Essentially, these elements define how individuals are allowed to function in certain environments (Fuller et al., 2021; Pearson et al., 2018). In other words, whether someone is considered disabled is dependent upon how other social groups engage with, support, and categorize them. Disability then, is a social construct.

Disability as a social construct is not monolithic; individuals who identify as disabled may share the commonality of disability, but they may also feel disabled in different ways than others with the same disability. Individuals with disabilities also identify with other social constructs; their sense of belonging with those other groups may have an equal or increased impact on their feelings, actions, and experiences. For example, individuals with disabilities may also identify strongly in terms of gender and feel most connected when with other people of the same gender. People with disabilities will experience social situations differently based upon both their disabilities and their other social constructs. Consider disability, gender, and sexuality. More than 5% of adults in the United States currently identify as lesbian, gay, bisexual or transgender, which is up from 4.5% in 2017 (Jones, 2021); 26% of adults in the United States have a documented disability; and one in four women are disabled (CDC, 2021). It would be impossible to claim these statistics do not overlap; for example, there is evidence that many individuals identify in both the autistic and LGBTQI+ communities (Narby, 2012). Unfortunately, the current sources of data usually do not include or report on individuals who identify within multiple constructs.

Intersection of Disability, Gender, and Sexuality

Gender is usually described using binary terms – or either / or – terms, as “male” or “female” based upon physical anatomy. This outlook is prevalent in society and has substantial social impact; consider the demographic information reported in the U.S Census (U.S. Census Bureau, 2019) or the language used on applications, health or education forms, or government identification. Gender, however, is not binary nor is it determined by physical anatomy (Prince, 2005); gender is an internal concept of self as male, female, a blend, neither or any other kind of combination (HRC, n. d.). “It involves gender expression, which may not conform to the ways in which society perceives an individual's gender to be (e.g., a masculine-appearing individual wearing skirts or dresses)” (McCollow et al. 2021, p. 92). Individuals may express their gender identity in many ways, e. g., with appearance (clothes, hairstyles) or behavior (HRC, n. d.).

Individuals with disabilities identify across a spectrum of different gender identities (Bedard et al., 2010), but they are at increased risk of not having opportunities to explore, establish, or express their gender identities (Niles & Harkins Monaco, 2017); this is

critically important, especially for those who identify outside of the binary. For example, autistic individuals are seven times more likely to be gender non-conforming than individuals without autism (Janssen et al., 2016). "This can lead to unique issues for individuals with autism as they navigate social situations, seek to understand their gender identity, gain access to services and support, or receive gender affirming treatments" (McCollow, 2021, p. 93; Rudacille, 2016).

Similarly, sexuality is typically presented as a binary (e.g., gay or straight) (Bedard et al., 2010), but "individuals can identify across the spectrum of sexuality and do not fall neatly into binary categories. For example, an individual may identify as bisexual, which means that they are romantically attracted to more than one gender" (McCollow, et al. 2021, p. 90). Individuals with disabilities identify across a variety of sexual identities (Bedard et al., 2010), are capable of learning about their own sexuality, and have the right to identify their own sexual identities (McCollow et al., 2021).

Intersectionality and Sexuality Education

Although sexuality was declared one of the basic citizenship rights at the United Nations Convention on the Rights of Persons with Disabilities, along with the right to mainstream education (UN, 2006), research indicates that people with disabilities have been historically marginalized in these and many other areas (Ferrante & Oak, 2020). While sometimes perceived through an ableist lens in which social expectations dictate that people with disabilities forgo engagement in sexual experiences, Ferrante and Oak (2020) assert that individuals with intellectual disabilities have a sexual identity and the right to both learn via inclusive sexuality education and express their sexuality. Although the disability sexuality movement has worked hard to dispel the myths that people with disabilities are unable to engage in sex, pleasure a partner, or consent to sexual activities, ableist attitudes persist (Lund & Johnson, 2014) leading to inadequate sexuality education. If provided at all, sexuality education for people with disabilities is often delayed until late adolescence (Dupras & Dionne, 2013). Additionally, sexuality curricula are less likely to include the adaptations such as manipulatives, chunking, and symbol supports, necessary to meet the diverse needs of learners with disabilities (Scholma & Baillie, 2021).

Given the aforementioned social barriers, individuals with disabilities often experience gaps in sexuality education requiring remediation at later stages of development to promote sexual agency and autonomy (Ferrante & Oak, 2020). Additionally, due to a confusion related to who should assume the role of sexuality educator, students may receive fragmented sexuality education from a combination of parents, special educators, general educators, and health educators, lacking a collaborative approach (Frank & Sandman, 2019). Furthermore, as schools align sexuality education with state regulations, schools may not provide a comprehensive sexuality education curriculum that supports a collaborative, intersectional methodology. This review of literature, curriculum, and resources aims to identify sexuality education curricula that align with an intersectional approach and provide suggestions for collaborative implementation that supports students holistically by respecting intersectional identities.

Method

This study includes a review of curricula and resources designed specifically for teaching sexuality and relationship education to

people with intellectual and developmental disabilities, including autism. The purpose of the review was to explore in what ways intersectionality was addressed in the curricula and resources. The significance of the study is to help educators, families, and community health educators become aware of possible intersectional curricula and resources to support marginalized persons in their understanding of sexuality education topics.

The first step in conducting the review included establishing selection criteria for inclusion of sexuality and relationship education curricula and resources. Two components were determined as guiding selection: 1) The curriculum or resource was specifically designed and marketed for teaching individuals with intellectual disabilities, developmental disabilities, or autism and 2) The curriculum or resource included directions and materials designed with examples for how to implement sexuality education topics to people with intellectual disabilities, developmental disabilities, or autism (IDD/autism).

The study designates between curricula and resources, highlighting both the differences and the importance of each within sexuality education. Both curricula and resources were eligible for inclusion in the study. To qualify for consideration for review in this study, a curriculum needed to address specific learning standards and include lesson plans, assignments, and materials for teaching a class, course, or professional development to persons with IDD/autism. Additionally, the curriculum was required to be comprehensive in nature by covering the key topics in comprehensive sexuality education outlined by the National Sex Education Standards (NSES), 2nd Edition (Future of Sex Education Initiative, 2020) and the American Acdemy of Pediatrics (Breuner & Mattson, 2016). These key topics are presented in Table 1 (Slocum, Eyres, & Wolfe, 2022).

Resources reviewed for this study could include books, a collection of visual supports, stand-alone lesson plans, activities, social scripts, suggestions for instructors, or other types of materials designed for teaching sexuality education to individuals with IDD/autism. The primary criteria for inclusion of a resource was whether or not the primary focus of the resource was to educate persons with IDD/autism and if the resource could be easily accessed for use. A systematic review was conducted, reviewing national and local agencies dedicated to sexuality and relationship education and working with people with IDD/autism. Additionally, the research team undertook a review of books, resource titles, and current literature related to sexuality and relationship education resources for persons with IDD/autism.

The systematic review for resources and curricula resulted in three curricula and seventeen resources for inclusion in the study. The curricula and resources are presented in Table 2. Once the list of curricula and resources was curated based on the parameters of the study, authors became familiar with the curricula and resources by using them to develop training for self-advocates, families, and educators. Two of the authors conducted multiple parent and educator training sessions on sexuality and relationship education using the curricula and resources examined.

Although intersectionality spans a broad range of identities and representation, the procedures for this curriculum and resource review were limited to answering the following three questions: 1) Is the curriculum or resource inclusive of persons who do not identify as aligning with

Table 1. *Key Topics of Comprehensive Sexuality Education*

NSES	AAP
Consent & healthy relationships	Healthy sexual development
Anatomy and Physiology	Gender Identity
Puberty and Adolescent Sexual Development	Interpersonal Relationships
Gender Identity and Expression	Affection
Sexual Orientation and Identity	Intimacy
Sexual Health	Body Image

Table 2. *Curriculum Review*

Curriculum	Author	Non-Heteronormative	Non-Binary	Non-White
Learn About Life	Attainment Company (2003)	✓	**X**	✓
Sexuality Education for People with Developmental Disabilities	Elevatus (2018)	✓	✓	✓
Special Education FLASH	Public Health – Seattle & King County (2018)	**X**	**X**	**X**

Note: ✓ = included; **X** = not included.

heterosexual ideology (non-heteronormative)?; 2) Is the curriculum or resource inclusive of persons who express their gender outside the typical norms of male or female (non-binary)? and 3) Is the curriculum or resource inclusive of persons who are non-White?

Finally, although culture and religion are not typically overtly represented in sexuality education curriculums, respecting these components of a student's intersectional identity will support holistic, comprehensive sexuality education. As such, in addition to reviewing curriculums and resources, we also examined literature related to collaboration with families, culturally sensitive pedagogy, and religious perspectives on sexuality education. Because there is limited research connecting sexuality education for individuals with disabilities and the implications relating to culture and religion, articles included in the literature review aligned with the topics of sexuality education, culture, and religion. This review of literature was aimed at answering the research question: What are research based practices for collaborating with families to implement sexuality education that respect intersectional identities of culture and religion?

Results

Intersectional identities and representation in the three curricula examined are presented in Table 2. Only one curriculum incorporated non-heteronormative, non-binary, and non-

White identities, topics, and/or representation. One curriculum included non-heteronormative and non-White representation, but not non-binary representation. The final curriculum did not include representations outside traditional heteronormative, binary, and White presenting persons.

Sexuality Education for People with Developmental Disabilities curriculum from Elevatus (2018), met the study's criteria to be considered non-heterornormative, non-binary and non-white. Along with meeting these criteria, this curriculum was informed by self-advocates and is designed for staff and/or teachers to co-teach alongside self-advocates. Lessons are easy to follow with slides, handouts, activities, visual supports and scripts available as part of the curriculum. Of the three curricula reviewed, this curriculum is the most inclusive and represents persons of various identities, including gender and sexuality.

Intersectional identities and representation in the resources examined are presented in Table 3. Of the 17 resources identified, three included non-heteronormative, non-binary, and non-White identities, topics, and/or representation. Two resources were identified as being non-applicable (N/A) regarding non-White representation because they did not include illustrations or were designed for Deaf-Blind persons. Five resources did not include non-binary topics but did incorporate information to represent non-White and non-heteronormative identities. Six resources included non-White representation, but not non-heteronormative or non-binary representation. One resource omitted topics and information reflective of non-heteronormative, non-binary, and non-White identities.

As stated above, there were three resources that met the criteria to be considered non-heterornormative, non-binary, and non-white. Multnomah County's *In Their Own Words* (2018) was developed from surveys and focus groups with young adults with IDD and stakeholders including caregivers, family members, agency staff, and others which resulted in guidelines for providing effective sexuality education to meet their needs. Advocates for Youth's *Rights, Respect, Responsibility* (2022) is a free curriculum available online which is aligned to the National Sexuality Education Standards. Since it was not written specifically for teaching persons with IDD, it was considered a resource for this study. Planned Parenthood of Delaware's *You're in Charge* (2021) program is customizable and designed for self-advocates with IDD. Lessons can be selected and/or edited to best meet the needs of each learner.

The results of the search for articles with the keywords sexuality/sex education, religion and culture, and intellectual/developmental disability (ID/DD), resulted in only one study from Sweden, in which ten special educators participated in phenomonological research related to sexuality education for their students with ID/DD (Nelson et al., 2020). Nelson et al.'s (2020) study acknowledges the differences in the teachers' cultural and religious backgrounds as compared to the families of their students and advocates for an intersectional approach, stating, "These conflicting reports still indicate that teachers require material that helps them address sexual and reproductive health and rights from an intersectional perspective, which includes gender, ethnicity, ability, religion and sexuality" (Nelson et al., 2020, p. 409).

Further search for the literature resulted in six articles that included the terms sexuality/sex education, religion, and ID/DD. Search criteria including the terms sexuality/sex

Table 3. *Resource Review*

Resource	Author	Non-Heteronormative	Non-Binary	Non-White
Girls/Boys Guide to Growing Up	Couwenhoven (2012)	**X**	**X**	✓
Teaching Children with Down Syndrome about Their Bodies, Boundaries, and Sexuality	Couwenhoven (2012)	**X**	**X**	✓
Sexuality and Relationship Education	Hartman (2014)	✓	**X**	✓
The Growing Up Guide for Girls/Boys	Hartman (2015)	**X**	**X**	✓
Things Ellie/Tom Likes	Reynolds (2015)	**X**	**X**	**X**
In Their Own Words	Multnomah County Health Department (2018)	✓	✓	✓
Healthy Bodies Toolkit	Vanderbilt Kennedy Center (2018)	**X**	**X**	✓
Rights, Respect, Responsibility	Advocates for Youth (2022)	✓	✓	✓
S.T.A.R.S.	Heighway & Webster (2007)	✓	**X**	✓
Tools Parents Can Use	Pacer Center (2010)	**X**	**X**	✓
The Autism Spectrum Guide to Sexuality & Relationships	Goodall (2016)	✓	✓	**N/A**
Sexuality Across the Lifespan	Baxley & Zendell (2005)	✓	**X**	✓
Introduction to Sexuality Education for Deaf-Blind	Moss & Blaha (2001	**X**	**X**	**N/A**
Circles	Stanfield Company (2020)	**X**	**X**	✓
You're in Charge	Planned Parenthood of Delaware (2021)	✓	✓	✓
LifeFacts: Sexuality	Stanfield Company (2020)	✓	**X**	✓
Safety Awareness for Empowerment (SAFE)	Hafner, D. (2005)	✓	**X**	✓

Note: ✓ = included; **X** = not included; N/A = not scored because of no visual representation

education, culture, and ID/DD resulted in 17 articles. These articles were used to supplement the one article that included all search criteria to provide a thorough perspective of sexuality education inclusive of cultural and religious perspectives.

Discussion

Students with disabilities identify with multiple social constructs and therefore are at risk to face increased, inequitable disadvantages across their intersectional identities (Hosking, 2008). Too often however, educators' levels of understanding of their students is nestled within their own social belonging (Niles & Harkins Monaco, 2019), and because most special educators identify amongst dominant social groups (NASP; 2017; U.S. Census, 2016), they are not likely to recognize, understand or expose intersected levels of oppression and identity injustice at either the micro or macro levels (Kozleski et al., 2020).

Educators and students alike are not fixed individuals! Sexuality educators can easily commit to learning how to better understand the consequences of identifying within multiple constructs and inequitable disadvantages across intersectional identities (Hosking, 2008). It is recommended to seek out studies that include the voices of individuals who identify within multiple constructs; there are several studies that explored the intersection of gender identity with autism and include individuals who identify within these constructs (see Davidson & Tamas, 2016; Kallitsounaki & Williams, 2020; Kourti & MacLeod, 2019; McCollow, 2021). It is also recommended that sexuality educators use preferred terminology and continue to learn about, reflect upon, and apply social identity theory (SIT), intersectionality, and critical disability theory (CDT) to their work.

Parents, educators, and community health educators who teach sexuality education best reach all of their students when instruction fosters intersectional pedagogy, including intersectional curricula and resources. This review demonstrates that the number of existing curricula and resources designed and adapted for teaching sexuality education to students with IDD is small. When applying a lens of intersectionality, that number becomes even smaller. This is problematic when we know that intersectional pedagogy best meets the needs of all students. The area of greatest need appears to be in non-binary representation. However, several resources mention or allude to non-heteronormative and non-binary representation, leaving the door open for parents, educators, and community health educators who teach sexuality education to adapt curricula and resources to include these representations.

All three curricula reviewed do provide flexibility for adaptations to honor the intersectionalities of all persons. For example, the review of the *Special Education FLASH* (Public Health – Seattle & King County, 2018) found it to be heteronormative, binary, and primarily representing persons who are white. The curriculum, however, is designed in such a way that handouts and slide presentations could be altered by sexuality educators to better represent intersectional identities. This curriculum also offers instructions for activities that make difficult concepts easier to understand which many would find helpful in building sexuality education classes. Additionally, the curriculum's sample letters, written to send to the trusted adults of the students taking the sexuality education classes, could be utilized as guides, while adding non-binary and non-heteronormative language.

Another example of a curriculum that can be adapted to support an intersectional approach is the *Learn about Life* curriculum from Attainment Company (2003), which met criteia for being non-heterornormative and non-white but not non-binary. Sexuality educators will find this curriculum advantageous to use with students who have limited reading abilities based on the inclusion of illustrations to help students grasp sexuality education concepts. Adaptations could be made to these easy to understand lessons by adding visuals that better represent non-binary persons. Pairing these adaptations with the curriculum's various suggestions for modifications to meet the learning needs of students with IDD will better support a holistic, intersectional approach to sexuality education reflective of the students' varied identities.

Similar to the curricula, a resource not meeting criteria of intersectional identities should not be interpreted as a reason to exclude using it in teaching sexuality education. All of the resources reviewed for this study can also be adapted to better meet the needs of all learners using an intersectional approach. Each of the resources reviewed for this study provides information about important concepts in sexuality education with many of the resources providing instructional strategies for learners with IDD. Resources that were not written specifically for persons with IDD can be modified to include strategies to meet individual learner's needs and supplemented with additional visuals to represent non-heternormative, non-binary, and non-white identities. Resources already including instructional adaptations for learners with IDD but not meeting criteria for representing non-heternormative, non-binary, and non-white identities may be modified with additional visual supports, supplemental lessons about gender, and added discussion.

Additionally, because a student's culture and religion may be an important part of their intersectional identity, sexuality educators are encouraged to take a collaborative approach to sexuality education (Scholma & Baillie, 2021). With research indicating that parents are experiencing the complexities of both feeling supportive of school-based sexuality education (Heller & Johnson, 2013) and fearful of participating in home-based implementation (Frank & Sandman, 2019), educators have the opportunity to educate students holistically through purposeful collaboration. Partnership with the family can include a person-centered approach to choosing intersectional curricula, planning that includes home-based cultural or religious norms, and respect of divergent sexuality perspectives.

The results of the literature review of articles related to supporting intersectional identities of culture and religion indicated that differences in cultural and religious experiences are most often presented as an "add-on" in sexuality education (Haggis & Mulholland, 2013). Sexuality education is often presented without any consideration to intersectional identities, but rather takes a one size fits all approach, thus reinforcing normative methodologies (Haggis & Mulholland, 2013). This simplistic approach to traditional sexuality education does not reflect the complex world in which the students are engaging. To avoid treating people as groups in need of assimilation, attention to difference should be embedded into sexuality education curriculum rather than added to the curriculum as deemed necessary. The fact that sexuality curricula and resources were unable to be evaluated for inclusion of culture and religion reveals the existing normativity of the current curricular offerings. If the voice of the majority is the voice in sexuality education, will students identifying with multiple identities feel

comfortable in education settings to engage the curriculum by asking questions related to cultural and faith-based perspectives?

Researchers also indicate the country of origin for parents of students in the United States education system does affect parental perspectives and expectations related to sexuality education (Heller & Johnson, 2013). Heller and Johnson's study examining sexuality education perspectives of parents born outside of the United States found that parents are overwhelmingly supportive of sexuality education in U.S. public schools, including comprehensive approaches that teach abstinence as one of several options for birth control and safe sex. Although Heller and Johnson's survey indicated a slight correlation between religiosity and perspective of sexuality education, parents indicated that they would share their religious perspective by encouraging abstinence from the home setting while appreciating that their children had information about pregnancy and sexually transmitted disease (STD) prevention.

Parental perspectives related to culture and religion aligned with current research related to the complexities of family collaboration in sexuality education. Although parents have an opportunity to positively impact their children's sexuality education, parents often have fears associated with engaging sexuality topics, leading to refraining from participating in sexuality education or failing to consent to sexuality education for their child (Frank & Sandman, 2019). Cultural differences can define sexuality topics as taboo, making sexuality education uncomfortable for parents to address (Heller & Johnson, 2013), but parental involvement is shown to both strengthen child/parent relationships and assist with consideration of homelife in planning for sexuality education (Frank & Sandman, 2019). Similarly, with most religions setting sexual boundaries that differ from U.S. cultural norms and connecting sexuality with morality (Mathewes, 2010), it is important for the sexuality educators to collaborate with parents to help students understand how sexuality education aligns with the students' religious belief systems.

Finally, it would be remiss to engage literature about sexuality education that supports the intersectional identities of students' culture and religion without acknowledging the safety of such conversations and the possibility for peer victimization. Current research indicates that peer victimization remains a substantial issue prior to and during postsecondary education, but that students with minoritized identities are at a greater risk (Barnett, 2017; Lund & Ross, 2021). University students in the Allen and Brooks (2012) study indicated that they were seeking an open, facilitated forum for which to participate in learning about and discussing the diverse perspectives related to sexuality, including culturally divergent religious perspectives. However, the study underscores the importance of the sexuality educator to pedagogically create a safe environment that encourages discussion about taboo topics related to sexuality, while providing students dignity amongst their peers (Allen & Brooks, 2012). When facilitated with safety in mind, open discussion can lead to spaces where students can learn about sexuality and examine a variety of perspectives in such a way that helps them to develop in their personal sexual identity (Allen & Brooks, 2012).

It is recommended educators familiarize themselves with the high risk of peer victimization for students with disabilities (Lund & Ross, 2021) and the public health concern of teen suicide (CDC, 2016) related to sexual perspectives and identities that

differ from U.S. cultural norms. To promote a safe environment for learning and open discussion, sexuality educators should implement pedagogy that promotes safety and be knowledgeable of resources to share with students who may need additional support.

Limitations

There are two major limitations to consider within this work. The first is the issue of language within the disability community; language is one of the critical tenants of CDT. Many communities advocate for the use of identity-first language, e.g., "autistic individual," as opposed to the more traditional people-first approach, "individual with autism." Most special education professionals are conditioned to use person-first language as the default label, but the autistic community, for example, is advocating for the use of identity-first language unless instructed otherwise. Using person-first language is reported to contribute harm to disabled communities, and we recognize that as a limitation of our work in this article. Many scholarly journals (this one included) require person-first language for publication, but if we are not using preferred terminology from the community themselves, are we honoring the voices, perspectives, and needs of the individuals who identify as disabled? We recognize that in this regard, we may have perpetuated harm to some communities for using person-first language.

The second limitation is with the research conducted on disability. Historically, research is conducted by professionals who are not disabled and who do not partner with disabled people; we understand that there may be greater risks for people who identify with non-dominant groups which may inhibit their participation in these projects, but the reality is that research on disability has perpetuated problematic ideas and caused harm to disabled communities. For example, autism research has pathologized autism by using negative behavioral characteristics to define and diagnose the disability, e. g., it has described autistic people as incapable of comprehending morality. When researchers are not autistic, their descriptions of autistic people are biased (Ainslow, 2021).

We recognize our roles within this limitation too; we have extensively studied how to meet at the intersection of disability, gender, and sexuality, but we do not identify within an intersectional spectrum of these social identities. Therefore, we cannot claim to understand how intersected levels of oppression affects those within these constructs. Additionally, we recognize that much of the available research is not conducted by or with disabled people, and therefore we may have cited controversial research or suggested inadequate resources. We acknowledge this is an issue throughout the field, and we will continue to seek opportunities to partner with others to authentically include intersectional perspectives and expertise.

Conclusion

Sexuality education is an essential part of student development, but students with disabilities often experience a variety of challenges, including identifying with multiple minoritized identities. When paired with delayed onset of education, poor pedagogical methods, and lack of collaboration with families, students with disabilities may not have the tools necessary to learn and grow sexually. When sexuality educators become well versed in intersectionality, employ intersectional curriculum, and plan to support intersectional identities, students with disabilities are wholistically supported in their sexual development. When educators partner with

families to consider cultural, religious, gender, sexual, and race differences, sexuality education can acknowledge and support the intersection of one or more minoritized identity, leading to healthy sexual development.

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Correspondence concerning this article should be addressed to: Christine R. Scholma, Trinity Christian College, 6601 West College Drive, Palos Heights, IL 60463. E-mail: christine.scholma@trnty.edu

Cracking the Social Code: A STEM and Social Skills Curriculum for Students with Intellectual and Developmental Disabilities

Claire Donehower Paul
Georgia State University

Sarah Hansen
Georgia State University

Chelsea Marelle
Georgia State University

Robert Pennington
University of North Carolina at Charlotte

Brian Grace
University of Central Florida

Monique Pinczynski
University of North Carolina at Charlotte

Janet Enriquez
University of North Carolina at Charlotte

Jessica De Marco
Georgia State University

Eleazar Vasquez
University of Central Florida

Abstract: Individuals with intellectual and developmental disabilities (IDD) often present with difficulties in social-communicative interactions. These difficulties may serve as barriers to successful participation in academic instruction across content areas, including science, technology, engineering, and math (STEM). In this pilot study, we evaluated the effects of an instructional package embedding social skills within a computer coding curriculum designed for children with IDD. Results indicated increases in levels of teacher fidelity and student's use of social skills. Implications for future research and practice are discussed.

All students need high quality instruction in the areas of science, technology, engineering, and mathematics (STEM) to be better prepared for the adapting workforce and ongoing technological advancement (Cortes, 2016). In a recent analysis of current and projected trends for labor markets, researchers found that socioeconomic indicators for quality of life are improved for individuals able to advance with technology. Individuals who pursue careers in STEM and information technology (IT) will continue to expect representation within the middle class as the wage gap increases due to the evolving technological landscape. Further, demand for employees who develop a skill set including elements of STEM and coding is also expected to increase.

To address this need, school leaders have made considerable efforts to integrate STEM content in contemporary instructional practices within classrooms (American Institute of Physics, 2013). One area of increased focus is on computer programming or coding which has been suggested to facilitate computational thinking, a fundamental analytical skill (Lye & Koh, 2019). Coding instruction has been related to improvements in mathematical problem solving, critical thinking, lower order thinking skills, social skills, and self-management (Popat & Starkey, 2019). Further, coding instruction may be related to students improved digital literacy skills (Hutchison et al., 2013).

Unfortunately, students with intellectual and developmental disabilities (IDD) may have limited access to high quality coding

instruction. This may be due in part to (a) reduced access to instruction in general education settings where they might be exposed to teachers with coding expertise (Kleinert et al., 2015), (b) lower teacher expectations for academic performance (Gee et al., 2020; Kleinert et al., 2015), and (c) student challenges in participation due to differences in their social communication repertoires (Andzik, 2018). Students with IDD often need evidence-based social communication instruction and carefully planned supports to fully respond to queries from their peers and teachers and to comment on and ask questions about content during instruction (Kearns et al., 2011; Pennington et al., 2021; Walker et al., 2022).

Recently, several research teams have investigated strategies for teaching coding skills to students with IDD. Taylor (2018) taught three students with ID, ages four to seven years, to program a small robot. The researcher used explicit instruction, concrete manipulatives, and tangible interfaces during one to one instructional sessions conducted in a segregated settings (e.g., home or school office). Similarly, Knight et al. (2019) used a model-lead-test procedure to teach a 10-year old boy with autism spectrum disorder (ASD) and severe challenging behavior to code in order to operate a small robot. Sessions were conducted in a one to one arrangement and in a quiet area within a segregated school. The participant acquired the targeted skills and generalized performance to different coding activities. Finally, Knight and colleagues (2019) evaluated the effectiveness of model-lead-test on teaching three high school students with ASD and challenging behavior to code in a one to one arrangement and in a common area outside of their classroom. All three participants acquired target skills, generalized performance to new codes, and were able to generate their own codes.

This emerging body of literature is promising as it demonstrates that students with IDD can learn coding skills when taught by researchers with carefully planned instructional procedures within tightly controlled contexts. Unfortunately, it presents a challenge to the scalability of coding instruction within typical school settings, where teachers often implement instruction to multiple students simultaneously and in classrooms under which there is less control of competing stimuli and reinforcers for engagement in non-instructional behaviors. In the extant literature, coding instruction for students with IDD has been delivered by researchers with familiarity and an interest in coding. In typical school settings, this is likely not the case and may serve to inhibit educators' adoption and implementation of coding curricula and instructional practices.

The adoption of coding and other STEM curricula may be viewed as in conflict with other critical instructional priorities (Ayres et al., 2011). Further, students with IDD and complex social communication needs might be viewed as not ready to participate in seemingly high-level academic tasks. To address these concerns, it may be necessary to teach social communication skills simultaneously with other curricular content. Researchers have investigated the effectiveness of teaching both academic content and other essential skills (e.g., communication, daily living) within the same lessons using embedded instructional opportunities. Researchers have taught students to make requests (Cheung et al., 2020; Johnson et al., 2004), read functional sight words (Collins et al., 2007; Johnson et al., 2004), read content-related vocabulary (Heinrich et al., 2016), and identify pictures (Jameson et al., 2007) during instruction in other content areas.

Embedded instruction may be well suited for targeting critical social communication skills during coding instruction in that there are often opportunities for teachers to arrange instructional contingencies within student interactions around group activities. Within these activities, students are engaged in problem solving as they execute programming and observe its effects on potentially reinforcing toys or robots. They are often required to interact around a single computer tablet or engage in dialogue regarding accurate placement of software "block" code. These opportunities may be used to facilitate the development of essential social skills including but not limited to turn-taking, negotiating, responding to bids for attention from others, requesting, and commenting. These skills are essential to self determined navigation of school and community settings and are often areas of needed support for learners with IDD (American Psychiatric Association, 2013). To date, there has been little research on the effects of embedding social skills instruction within group coding instruction.

Project Social Code aims to address this gap in the research by (a) developing and refining feasible and effective curricula to support teachers in providing access to high-quality social skills and STEM instruction for students with ASD and ID and (b) disseminating a scalable professional development process to support teachers' implementation of evidence-based social robotics. The primary goals of Project Social Code are to improve outcomes for students with IDD in the areas of social communication skills and social robotics. The purpose of the present study was to evaluate the effects of an instructional package for teaching students with ASD social skills within the context of a coding curriculum.

Method

In this investigation, we sought to pilot Project Social Code materials and supports. These including an initial professional development and orientation, a modified coding curriculum with embedded social skills instruction called "Cracking the Social Code," and systematic coaching and feedback during the initial phase of implementation. We designed our curricular modifications around our social skills framework. The framework included three classes of social skills, we deemed appropriate for work within STEM activities and other contexts: (a) team player skills, (b) problem solver skills, and (c) collaborator skills (see Figure 1). Each skill class has 3-4 sub domains that included target skills that are broken down across three levels of complexity. We presented the framework through an advisory board comprised of educators, administrators, robotics specialists, and speech language pathologists.

Participants

We conducted the study in a large, suburban school district in Georgia with a population of students that is 41% White, 46% Black, 10% Hispanic or Latino, and 2% Asian (National Center for Education Statistics, 2019). The primary participants were five elementary school, special education teachers in self-contained or resource classrooms in a public school district in Georgia. Teacher participants were identified by the district level special education coordinator who recruited participants via email. Additionally, three to four students from each classroom were observed for target social skills during the observed lessons. All students' families were sent a letter explaining the study and were given the opportunity for their child to opt out of data collection. From the remaining students, each teacher identified the students who they felt met criteria for the study (i.e.., educational diagnosis of ASD or

ID, presented social skill differences that impacted their ability to work in groups).

Materials

For the purposed of this pilot study, the participants (i.e., teachers and students) engaged with the Dash robot, the Blockly coding application, and the modified curriculum.

Dash. Dash is an educational robot that can be programmed wirelessly using a tablet. The combination of sensors, child friendly programming tools on touch devices, and design of the robot makes it accessible for children as young as five years old. It can be coded to move, emit lights, emit sounds, and interact with users. Dash has two drive wheels and a balance caster that enables it to drive forwards, backwards, spin and move almost anyway you like. The 12 LEDs in its eye can be programmed independently to create patterns and animations. The Blockly app that is used to program Dash, employs drag-and-drop programming, were learners can snap pieces of code together on a tablet interface. This application is compatiable with Apple, Google, Amazon devices as well as Chromebooks.

Adapted Lesson Plans from Wonder Workshop Curriculum. Wonder Workshop houses a set of resources for teachers called Class Connect. Within Class Connect are lesson plans for teaching targeted coding skills which were used as the basis for the coding instruction in "Cracking the Social Code." These lesson plans were adapted by the Project Social Code research team which includes faculty members and doctoral students with extensive experience working in schools, teaching, and supporting students with IDD. The research team focused on modifying the STEM/coding content to make it more accessible to a wide range of learners including students with IDD and systematically embedding evidence-based social skills instruction into the curriculum. "Cracking the Social Code" also was vetted through an advisory board and external evaluator who are national experts in special education, applied behavior analysis, robotics, speech-language pathology, and other related disciplines.

Professional Development. The initial professional development for this pilot was held in person with some members of the research team participating via video call. The training was 2 hrs in duration and covered a range of topics including (a) an overview of Project Social Code goals, (b) an overview of codng instruction and embedded social skills instruction, (c) outline of pilot study components, (d) an orientation to Dash and the Blockly application, and (e) an orientation to the "Cracking the Social Code" curriculum.

Weekly Observations and Coaching. After the initial professional development, all participating teachers were observed weekly for 30-45 mins. During these observations, a member of the research team collected data on teacher implementation fidelity and the social skills demonstrated by student participants. Following the observation, the observer offered relevant suggestions to the teacher regarding implementation and answered questions the teacher asked.

Data Collection

For this pilot study, data were collected on the teachers' implementation of the curriculum, students' demonstration of social skills, and teachers' perceptions of the curriculum and professional development package at the end of the study window.

Teacher Fidelity Rubric. The teacher fidelity rubric focused on two primary areas: implementation of key lesson components

and use of evidence-based practices. The key lesson components included items such as preparing environment for instruction, introducing STEM and social skills objectives, following curriculum for STEM and social skills, providing practice opportunities for coding and social skills, and effectively using strategies to increase student responding. The five evidence-based practices highlighted in Cracking the Social Code are referred to as the "Fundamental Five" and include: use of visual supports, use of communication supports, creating meaningful opportunities to respond, appropriate use of prompting, and appropriate use of reinforcement. The fidelity rubric included an inventory of these practices observed during each session.

Student Social Skills Observation Tool

The student social skills observation tool was sligned with the social skills framework (see Figure 1). During each observation, a member of the research team noted if each target social skill was absent or present for each of the student participants.

Focus Group Protocol

The focus group questions were designed to collect summative feedback on the professional development experience, usability of the curriculum, helpfulness of the weekly feedback and coaching sessions, and student outcomes. Sample questions are outlined below:

Professional Development

- Think back to the initial professional development that you attended for Project Social Code. What were some of the things that were the most helpful about that training?
- Now that you have implemented this program for 6 weeks, what would you suggest be changed about or added to the initial professional development to help better prepare teachers?

Curriculum

- Now, we are going to shift gears to talk about the curriculum itself. Think about the structure, format, and content of the curriculum when answering these questions. What are some things that you liked about the curriculum and supplemental materials?
- What are some things you would recommend changing about the curriculum and supplemental materials?

Weekly Observations and Coaching

- Every week a member of the research team came to observe in your classroom and then followed up to debrief your experience using the curriculum that week. What about these observations and debrief sessions did you find to be helpful?
- What would you change about these observations and debrief sessions?

Outcomes and Final Thoughts

- Have you noticed any changes in your students as they have participated in this instruction?
- Have you noticed any changes in the way you approach social skills instruction?
- Do you have any final thoughts you would like to share with the Project Social Code leadership team?

Results

Teacher Fidelity Results

Figure 2 shows the fidelity of implementation for lesson components and fundamental five strategies for 6 weeks of observations across the five teachers. The closed circles signify the fidelity of lesson plan components, and the open squares represent the use of Fundamental Five strategies. On average, teacher participants demonstrated 89% fidelity for performing the appropriate steps

Figure 1. "*Cracking the Social Code": Social Skills Framework*

Strand	Goal Areas	Level	Level	Level
Team Players	Managing Personal Space Social Responsivity Turn taking Building Relationships	**Managing Personal Space** Stays in close proximity to peers during group work	**Managing Personal Space** Maintains personal space throughout group activity	**Managing Personal Space** Uses appropriate social cues to manage proximity during group activities (e.g., asking permission to move closer, asking for space from others)
		Social Responsivity Orients to peers when they are speaking	**Social Responsivity** Responds to peer bids for attention	**Social Responsivity** Responds to suggestions made by a peer
		Turn-taking Relinquishes access to items, activities	**Turn-taking** Tolerates waiting for a turn	**Turn-taking** Facilitates others turn-taking, offers turns to peers
		Building Relationships Refers to peers by their names	**Building Relationships** Comments on peer behavior	**Building Relationships** Provides positive feedback or makes empathetic statements towards peers
Problem Solvers	Accessing Compromising Self-Management	**Access** Requests an item or access to an activity from peer	**Access** Requests assistance with a task or a missing item from a peer	**Access** Requests information from peers
		Compromising Changes a single response in response to peer feedback	**Compromising** Changes a course of action in response to peer feedback	**Compromising** Provides recommendations for compromise between other group members.
		Self-Management Imitates peer behavior to complete a task	**Self-Management** Asks a peer for directions	**Self-Management** Relies on multiple sources of information to guide participation (e.g., peer models, written directions, peer feedback
Contr-ibutors	Describing Engaging Discussing	**Describes** Labels items with prompt ("what is that?"); Labels people	**Describes** Labels items or actions without prompt	**Describes** Explains content or process to peers Offers reasonable solutions or assistance to peers
		Engages Engages with materials in appropriate or expected way	**Engages** Performs a necessary response or step during group activities	**Engages** Performs multiple necessary responses or steps during group activities
		Discusses Pointing to materials to indicate preferences or answer peer questions	**Discusses** Emits or responds to what, where, and who questions	**Discusses** Expresses an opinion Emits or responds to how and why questions Engages in "small talk"

of each lesson plan and implemented 70% of the fundamental five strategies.

Teacher A demonstrated 92% (range 63%-100%) of lesson components and an average of 67% (range 60%-80%) use of the Fundamental Five strategies across the six observations. Teacher B had the lowest average of 77% (range 75%-80%) for implementation of lesson components and 63% (range 60%-80%) of Fundamental Five strategies. Teacher C had the lowest Fundamental Five strategy use with an average of 60% and 83% (range 50%-100%) for implementation of lesson plan components. Teacher D established an average of 96% (range 75%-100%) of lesson components implemented and 67% (range 60%-100%) of the Fundamental Five strategies. The highest percentage of fidelity for lesson plan components was Teacher E who had an average of 98% (range 88%-100%) across six observations and an average of 93% (range 60%-100%) of Fundamental Five strategies implemented.

Although the fidelity percentages varied across participants and sessions, all teacher participants reached 80% or above of fidelity of lesson plan components implemented. All teachers except Teacher C reached 80% or above for the implementation of Fundamental Five strategies.

Student Social Skills Data

Figure 3 shows the average number of target social skills demonstrated by the student participants across all five classrooms during weekly observations. Data indicate a grdaully increasing trend from the from session one (i.e., 11 social skills [range 7-16]) to session four (i.e., 20 social skills [range 14-26]). During sessions five and six, student emitted an average of 18 social skills [range 14-24 and 14-27, respectively].

Figure 4 depicts the number of social skills performed by the students for each classroom across six observations. The number of students per classroom ranged from two students to four students. Both classrooms B and E had one student drop out during the course of data collection for reasons unrelated to the present study. Overall, data indicate that students in each classroom increased their use of targeted social skills across the duration of Project Social Code.

Additionally, percent increase was calculated in order to compare change in the number of social skills demonstrated for students in each classroom from the first three data points to the second three data points. Percent change for student social skills in Classroom A was 81.7%, Classroom B was 36.8%, Classroom C was 36.2%, Classroom D was 27.7%, and Classroom E was 54.0% from the first half of the study (weeks 1-3) to the second half of the study (weeks 4-6).

Feedback from Focus Groups

Four of the five teacher participants participated in a focus group session. The focus group lasted approximately an hour and was led by three members of the research team. Due to scheduling difficulties, one teacher participant attended an interview session with the same three research team members that lasted approxmiately 20 min. All feedback sessions were held in a virtual platform and were recorded.

Professional Development

With regards to the initial professional development session, teachers all reported to find practicing with Dash to be helpful. One teacher reported that practicing with Dash during the training and at home relieved some of the anxiety that she had about teaching coding. Other teachers reported that getting to see the lesson plans during training was

Figure 2. *Teacher Fidelity of Implementation*

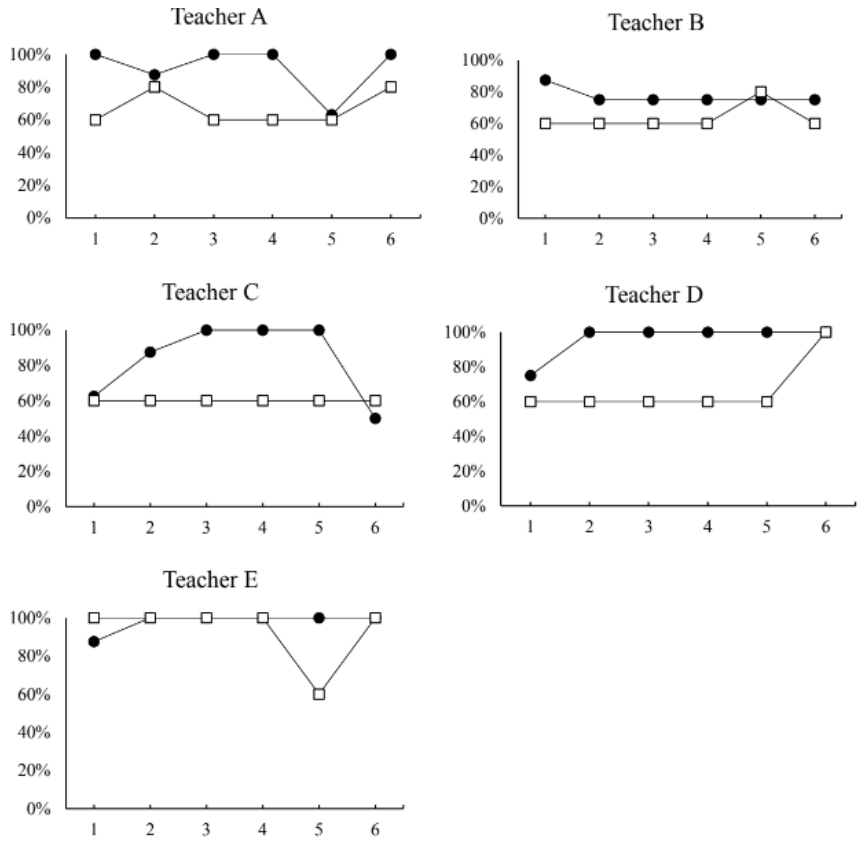


Figure 3. *Average Student Social Skills*

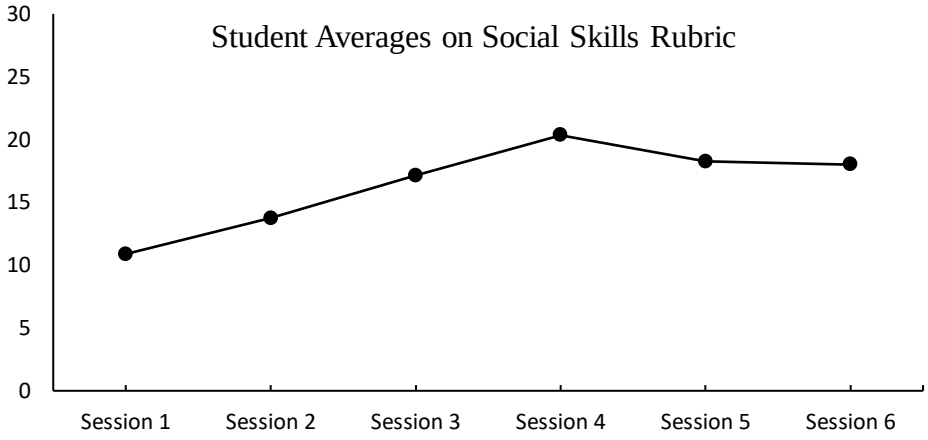
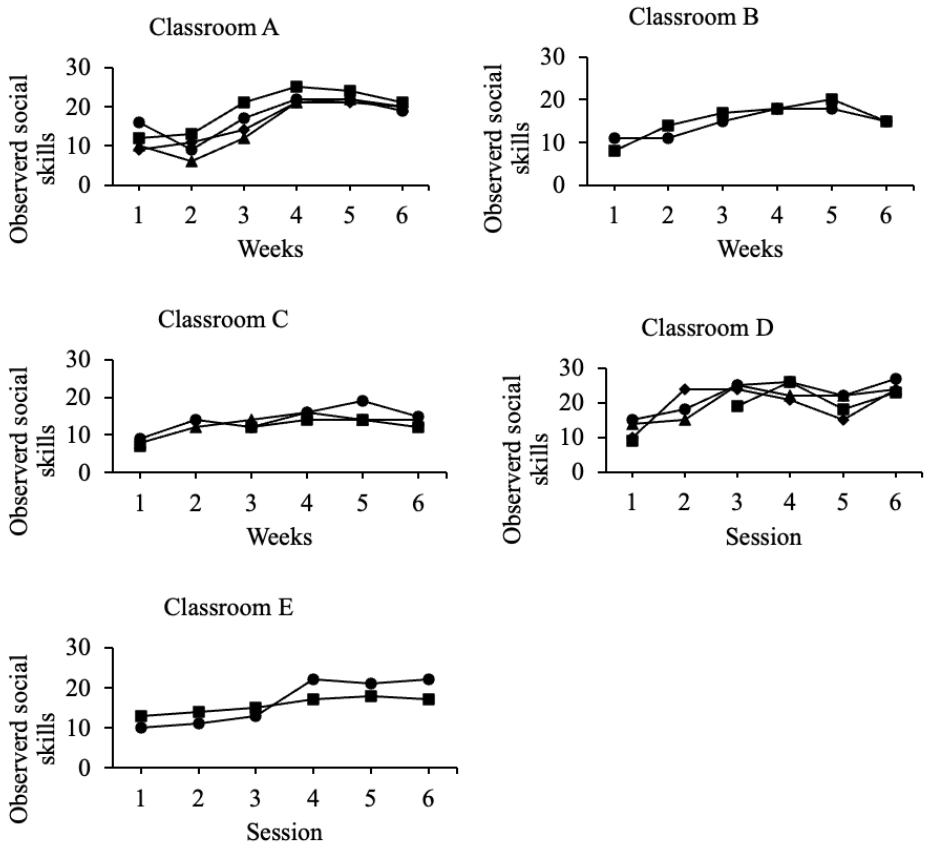


Figure 4. *Student Social Skills by Classroom*



helpful in understanding the purpose and arrangement of each part of the lesson. Teachers suggested that examples of how to trouble shoot different technology problems that may arise during the lessons (i.e., Dash not connecting to the iPad) would have been helpful. They also reported that it would have been beneficial to observe someone teach a lesson during the training via presenting short video clips while walking through each section of the lesson plan, providing an entire prerecorded lesson, or engaging in role-playing opportunities. Finally, the teachers suggested adding a component to the training or midway through the project so that the teacher participants could get together and collaborate on the lessons or find ideas that are working in other classrooms.

Curriculum

Overall, the teachers reported positive perceptions regarding the curriculum and its format. More specifically, they reported liking that lessons were explicit in their directons related to coding and social skills instruction and were followed by hands-on practice. Some teachers reported doing the lessons five days a week and others, three days a week. One teacher reported that she used her "off days" to repeat challenging activities or finish up activities that they didn't get to in the previous days. All of the teachers reported enjoying having the book of lessons printed out but reported this to present difficulites when trying to access different video links. They suggested creating an electronic copy of the lessons so that they could easily access linked videos

and materials. The teachers and students reported enjoying working on the challenge cards because they included a visual support showing how the code should be built. This was beneficial for partner activities and gave the teachers an opportunity to let the students work together without as much teacher support.

Weekly Observations and Coaching

All teachers reported that the weekly observations and coaching sessions were helpful. Multiple teachers described the feedback as beneficial and supportive. During the observations, a member of the research team was able to help trouble shoot any technology-related issues and provide suggestions for student grouping and accommodations. None of the teachers reported any disruptions to their lessons by having a visitor in the room. Although, one teacher did report that she was hoping for more critical feedback to help her improve her instruction related to coding skills.

Outcomes

All five teacher participants reported positive student outcomes as a result of participation in Project Social Code. Multiple teachers reported the outcomes generalized to other subject areas and other classrooms. They noted that other teachers have reported improvements in the social-communication skills of their students. More specifically, one teacher reported that a student who was selectively mute spoke words during the "Cracking the Social Code" lessons. A few teachers reported not only improvements in the students but also in themselves. They said being a part of this project was "eye-opening" for them in noticing how much they talked in the classroom, providing limited opportunities for the students to engage with one another. Every teacher reported to be grateful for the experience. Furthermore, one teacher reported how glad she was that the research team selected her population of students because it is rare that her students are ever given an opportunity to get something "new" or "cool" for their classroom (i.e., computer labs or tablets). One teacher said, "I feel like our kids are so blessed by this opportunity and it makes me sad because I want all students to have this opportunity. It made a huge difference in our classroom for the students and for me as a teacher." Another teacher reported that being a part of this project changed the perspective that the rest of the school has on her students now. Her class was videotaped and shared with the rest of the building, and she felt like it increased the expectations the rest of the students and staff have for her students.

Discussion

The current study was a brief pilot of a STEM curriculum with embedded social skills instruction delivered within special education classroom routines. Overall, our findings indicate that teachers were able to implement Project Social Code with fidelity, and that students may have benefitted from the modified curriculum. Further, teachers reported the currulucm and professional development package to be a usable and feasible way to address these coding and social skills.

Coding and other STEM skills are competencies that prepare students for employment after graduation from high school. Students with disabilities are often underprepared to enter the workforce, or transition to independent life more generally (Chandroo et al., 2018; Whittenburg et al., 2019). Although interventions exist to teach job skills to students with disabilities (Boles et al., 2019) and to teach more general life skills, these skills are insufficient if they are not paired with support for social skills that allow for growth and development within the workplace. Pairing STEM skills with social

communication support will allow for employability and the potential for social connections in the workplace. Teachers in the current study reported high rates of student engagement with the Dash robots, which provided a motivating instructional context to work on social communication skills. Coding and social skills gained from these lesson plans may be employed to future job settings as well as sparking interest in a new area of employment.

Embedding instruction on social communication skills into everyday classroom activities and academic content area instruction allows for additional support on these targets for students who need these supports without excluding them from the day-to-day activities of the classroom. Results from this initial pilot indicate that curricula like "Cracking the Social Code" may be a useable and feasible format to support teachers in ensuring they address a range on essential instructional targets. Further, our findings suggest that the curriculum can be implemented as part of regular classroom routines.

Finally, teachers in this pilot reported being initially apprehensive about teaching coding and working with robots. Following implementation of Project Social Code, teachers reported being relieved that many of the teaching strategies within the lesson plans were familiar to them. The presentation of packaged adapted curricula may facilitate teachers' adoption and use of coding instruction in classrooms for students with IDD as the prepared materials may reduce teacher effort in preparation and may assuage concerns related to their content knowledge as lesson content is provided as scripts. Over the several decades, researchers have developed many scripted packages to support teachers of students with IDD to deliver high quality academic instrucition (e.g., Browder et al., 2008; Jimenez et al., 201; Knight et al., 2013). Project Social Code is an extension of this work into the area of computer engineering.

Limitations

The current pilot study presented several limitations. First, we did not implement this study using a design capable of demonstrating a functional relation. Given exploratory nature of the pilot and the pandemic conditions under which it was conducted we decided it to not be feasible or contextually appropriate to implement necessary controls for threats to internal validity. Therefore, our findings should be considered with caution. Second, our investigation only lasted six weeks, which limited our analysis. For example, it is plausible that during the first few weeks of intervention the robots might have had some inhibitive effect on responding which dissipated after several weeks of exposure. Continually, we did not implement a formal coaching protocal and thus, were not able to account for the effects of coaching on our outcomes. This is especially relevant given that teachers often implement curricular packages without support and "out of the box." Finally, it is notable that a lack of resources to purchase intervention materials (i.e. robots and iPads) may limit access to the instructional package by some educators and their students. All other required materials are freely available for download.

Implications for Research and Practice

Our findings offer several implication for research and practice. In our pilot, we developed a social communication skill assessment tool, but found it difficuly to use during observations. There is need for feasible instruments sensitive enough to withstand repeated measures and demonstrate student progress over time in typical classroom settings. Second, our study

presented a case example of implementing a coding curriculum for students with IDD. There is a need to validate coding curricula for this population, using rigorous experimental evaluations. In terms of practice, our findings indicate that social skills can be embedded into STEM instruction in a way that is manageable to practitioners. Manualizing this intervention and providing a way for teachers to access lessons and support asynchronously would help strengthen future practice.

Conclusion

The current study is a small-scale pilot aimed at demonstrating initial usability and feasibility of the "Cracking the Social Code" intervention. Teachers participated in an initial professional development and were provided with a curriculum to implement in their classroom with weekly feedback and coaching from a member of the research team. Following this training and support, teacher fidelity trended upwards across the intervention, as did student demonstration of target social skills. Results indicate more research and teacher training is needed in this area.

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Correspondence concerning this article should be addressed to Claire Donehower Paul, Georgia State University, 30 Pryor Street, Atlanta GA 30303. E-mail: cdonehower@gsu.edu

Mental Health of College Students with Disabilities

S. Jay Kuder
Rowan University

Amy L. Accardo
Rowan University

Abstract: The purpose of this study was to examine the frequency, types, and impact of mental health conditions on the college experiences of students with disabilities. Data were collected through an online survey from students with disabilities who were registered with the office of disability support services at a mid-size university in the eastern United States. A large percentage (80%) of the students reported having a mental health condition. Students with autism reported the highest rates of mental health conditions (92%) followed by students with ADHD (90%). Disclosure of mental health condition was reported by 76% of students, primarily to receive accommodations and support services. An individualized approach to mental health supports for college students with disabilities emerges as a necessity. Implications for practice are provided.

The mental health of students is an increasing concern for colleges and universities. Studies of the prevalence of mental health conditions among postsecondary students both in the United States and in other countries have reported that approximately one-third of students have a history of one or more mental health conditions (American College Health Association, 2019; Auerbach et al., 2018). Moreover, the prevalence of mental health conditions in the college student population is increasing. Drawing on 10 years of data from the Healthy Minds Study, a large web-based annual survey, Lipson et al. (2019) reported that from 2007 to 2017 the percentage of students seeking treatment for mental health conditions increased from 19% to 34%.

With the onset of the COVID-19 pandemic the mental health concerns of college students have further increased (Liu et al., 2021; Wang et al., 2020). In fact, adults with disabilities have experienced disproportionally higher levels of mental health concerns (e.g., depression, anxiety, stress and suicidal ideation) as a result of the COVID-19 pandemic (Okoro et al., 2021). The mental health of college students with disabilities may be further exacerbated by other intersectional factors as well, such as low socioeconomic status (Sabaner & Arnold, 2021), race, and sexual and gender identities (Bourdon et al., 2020; Miller et al., 2021).

In the current paper, a mental health condition is operationally defined as a self-reported or medically diagnosed psychiatric impairment such as anxiety, depression, bipolar disorder, schizophrenia, etc., that "affects a person's thinking, feeling, or mood" (National Alliance on mental Illness [NAMI], 2020) to a degree that it negatively impacts their daily functioning and interpersonal relationships (Gruttadaro & Crudo, 2012). There is a recognized need to understand and provide preventative interventions and support services for individuals with mental health conditions internationally, including emphasis on the population of young adult college students (e.g., Alonso et al., 2019).

Mental health conditions can have a negative impact on academic success. For example, depression is associated with lower GPA and higher rates of dropping out of college

(Eisenberg et al., 2009). Further evidence of this association comes from the Spring 2019 National College Health Assessment (American College Health Association, 2019) which found that 24% of respondents indicated that depression had negatively impacted their academic performance and 32% reported that anxiety had impacted their performance. The results of these and numerous other studies (e.g. Auerbach et al., 2018; Hunt & Eisenberg, 2010) indicate that mental health conditions are a challenge for an increasing number of postsecondary students and threaten their ability to achieve their academic goals. Recognizing the self-reported experiences of our university students is essential to informing the provision of mental health related support services and accommodations.

College Students with Disabilities

College students with disabilities may be especially at risk for both mental health conditions and academic and social difficulties related to those conditions. For example, anxiety and depression have been found to be associated with attention deficit hyperactivity disorder (ADHD) in both children (Gau et al., 2010) and young adults (Yang et al., 2013). Difficulties with social skills (Kavale & Mostert, 2004) have been widely reported in children with learning disabilities as have higher rates of anxiety and depression in adults with learning disabilities (Klassen et al., 2013). A recent review of research on mental health and college students on the autism spectrum (Kuder et al., 2020) found that across studies more than 50% of students had co-occurring mental health conditions such as anxiety, depression, and loneliness (e.g., see Anderson et al., 2018). Similarly, in a prior review of the experiences of college students on the autism spectrum 71% of students reported anxiety, 54% loneliness and 47% depression (Gelbar et al., 2014). The research reporting that college students on the autism spectrum experience mental health conditions at higher rates than their non-autistic peers is of concern.

Disclosure

Adding to the impact of mental health conditions is the requirement of disclosing the condition to the university and to university professors as a barrier to receiving accommodations and support services. The decision of whether or not to disclose a mental health condition to their university and professors is complex for college students, often impacted by factors including anxiety, potential stigma, and anticipated reaction of the professor (Woodhead et al., 2021). Students may weigh the potential perceived benefits of disclosure with potential perceived risk factors, choosing not to disclose at all or until mental health conditions become exacerbated, eliminating an opportunity for mental health treatment and supports (Kranke et al., 2013).

The purpose of this study is to investigate the prevalence and type of mental health condition reported by university students with disabilities, student perspectives regarding disclosure of mental health conditions and use of accommodations, as well as the reported impact mental health conditions have on students' academic (e.g. grades/GPA, coursework, homework completion), social (e.g., peer interactions, friendships, social club involvement), and nonacademic (e.g. engagement in hobbies, shopping, playing video games) college experiences. We believe that by better understanding the mental health experiences of postsecondary students with disabilities, colleges and universities can better focus assistance on the unique needs of these students and be more aware of the importance of identifying students needing mental health supports. Research questions follow:

1. What is the prevalence and type of mental health condition reported by college students with disabilities?
2. What are student perspectives regarding disclosure of mental health conditions?
3. What are student perspectives regarding accommodations and supports for mental health conditions?
4. What is the student reported impact of mental health conditions on academic and nonacademic college success?

Method

The present pilot study used a self-report questionnaire to investigate the perspectives of students with disabilities on their mental health experiences at a public university in the eastern United States. Survey methodology was selected to elicit participant representation beyond data that could be obtained through the smaller sample sizes that would be used in qualitative case study or interview methods. The survey was designed to assess student perspectives related to: (a) mental health conditions, (b) disclosure, (c) accommodations and support services received, and (d) overall impact of mental health on student college experiences.

Questionnaire

The questionnaire was adapted from a survey on the mental health of college students conducted by the National Alliance on Mental Health (NAMI; see Gruttadaro & Crudo, 2012). NAMI developed the original survey to "hear directly from students about whether schools are meeting their needs and what improvements are needed to support their academic experience" (Gruttadaro & Crudo, 2012; p. 4). The adapted questionnaire consisted of eight sections: (1) Following demographic questions, students were asked to identify if they have ever been diagnosed with a mental health condition and to report the condition(s). Student responding "no" were thanked and exited from the questionnaire; (2) Students were asked if they disclosed the mental health condition to the university, and the open-ended question, why, or why not; (3) Students who disclosed a mental health condition to the university were asked if they requested accommodations or support services for the condition and whether or not accommodations or supports were received; (4) Student were asked to rate the helpfulness of accommodations using a Likert scale; (5) Students were then asked to identify the accommodations and supports they received (if any); (6) next, they were asked to identify which accommodations or support services they found most helpful; (7) then students were asked to rate the impact of having a diagnosed mental health condition on their experience at the university using a Likert scale, and; (8) finally, students were asked in what way(s) their mental health condition had impacted their college experience.

Participants

The study was conducted at a mid-size university (16,000 students) in the eastern United States. All participants had a confirmed disclosure of a disability with the university office of disability support services and consented to participate in the study. Following institutional review board approval, one invitation to complete the questionnaire was emailed to students registered to receive disability support services along with a link to complete the questionnaire online through Qualtrics. The email was sent by the office of disability support services and no follow-up requests for participation occurred.

Data Analysis

Quantitative data were analyzed for number and percentage of respondents. Qualitative data, specifically student open-ended

responses to why they do and do not disclose mental health conditions and their experiences with accommodations and supports, were coded for themes using an open coding approach (Saldana, 2009). Responses were reviewed in full, then re-read with emerging codes compared for similarities leading to themes. Student responses to the open-ended questions were considered to add depth to the quantitative (e.g. Likert scale) responses. As a quality check, all codes and themes were discussed between the two authors with discrepancies discussed until reaching 100% agreement.

Results

Responses by All Participants

A total of 219 students responded to the request to participate in the survey. The mean age of the subject sample was 20.8. A total of 67% of students identified as female, 29% identified as male, and 2% identified as transgender. Of the students who chose to provide information about their ethnicity, 85% were Caucasian, 4% were African American, 6% were Hispanic, and (4%) were Asian. Students represented a range of disabilities. The largest group were students with a primary mental health condition (35%). Students with a medical condition as their primary diagnosis comprised 30% of the sample. Other disabilities represented in the sample included ADHD (14%), learning disabled (10%) and autistic (9%).

Mental Health Conditions

In response to the question of whether they had been diagnosed with a mental health condition, 133 (80%) of the students who answered the question said "yes," 34 (20%) answered "no." Those students who reported having a mental health condition were asked to identify the type of condition they had been diagnosed with. The most frequently represented condition was combined anxiety and depression (55 students; 47% of the sample). Anxiety without co-occurring depression was reported by 17 students (14%) followed by students with obsessive-compulsive disorder (OCD; 12 students; 10%) and those with post-traumatic stress disorder (PTSD; 12 students; 10%). Students with depression without anxiety (*n*=7; 6%), those with bipolar disorder (*n*=7; 6%) and those with panic disorders (*n*=5; 4%) made up the remainder of the sample. A total of 25 of the 151 students (17%) who responded to the question on type of mental health condition reported having more than one condition.

Impact of Mental Health Conditions

Students were asked what, if any, impact their mental health condition had on their success at the university via a closed ended question with four response options: a significant impact; a moderate impact; a slight impact; or, no impact. A total of 85% of the respondents reported that their condition had either a significant (53%) or a moderate (32%) impact on their college success. For example, one student who reported a slight impact shared that depression made it hard to attend class. Another student who reported a significant impact reported that they had attempted suicide after receiving a poor grade. Students were then asked about the impact of their mental health condition on three areas of functioning- academic, social, and participation in non-academic activities. A total of 41% of the respondents reported impacts in all three areas. Academic impacts alone were reported by 26% followed by social impact (23%), and participation (9%).

Disclosure of Mental Health Conditions

Most (76%) of the student respondents reported that they had disclosed their mental health condition to the university. Student open-ended responses were coded to identify primary reasons for choosing to disclose or

not disclose a mental health condition (see Table 1) as follows:

Help, accommodations and support services. The primary reason cited for disclosure by those students who provided a response was to receive help through accommodations and/or support services including housing and general support. One student reported, "My mental health can become debilitating enough that it interferes with my ability to go to class or complete my work on time. I also requested a single room when I was in a first-year residence hall."

Another student shared, "Dealing with chronic pain and other physical health symptoms affects my mental health. Also, college in particular is one of the most taxing tasks for my mental health so I needed support from the (Disability Support Services) Center." Similarly, many students reported disclosing specifically for the academic accommodation of extended time on tests and quizzes. One student shared, "Due to my high levels of anxiety, I need extra time during testing situations. I have disclosed my health condition to the university to have permission to use extra time." Similarly, another reported, "I've only mentioned my anxiety and ADHD in order to get 1.5 time on tests and quizzes."

For understanding and awareness. The second most reported reason provided to disclose was to gain the understanding of others. One student shared, "I think that it is important for my professors to know that I have anxiety. I specifically get anxiety during exams and tend to score poorly; I utilize the testing center." Another student reported disclosing their mental health condition, "Because I think it's important to disclose this information to allow an understanding and transparent learning environment." Students who did not disclose their mental health condition cited three primary reasons: lack of knowledge about disclosure (22%), fear of being judged for their condition (22%), and a belief that they did not need assistance (22%):

Didn't know they could or process for supports. University students with a disability who do not disclose their mental health condition reported not knowing that they could receive accommodations and supports and/or not knowing the process to follow to receive them. One student shared, "It seems too complicated to try to get help about mental health and I almost feel like it's a burden I have to bear because everyone else can handle college just fine, and I ought to do it too." Another shared, "I didn't think there was any accommodations available."

To maintain privacy/ not be judged. The desire to maintain privacy regarding their mental health condition was also a primary response of 22% of students who do not disclose their mental health condition. One student stated, "Because it's too personal and I worry about people's perceptions of me." Another shared, "I don't want to be judged or labeled."

Belief they will be fine without disclosing. The third primary reason for not disclosing a mental health condition (also reported at 22%) was the belief that they did not need university supports. One student shared, "I do not live on campus and do not find it necessary to tell (college instructors) and classmates because I can do fine without disclosing that information. Another students stated, "I did not believe that it was pertinent information to disclose and that improvement would follow/it would disappear."

Perceptions of Accommodations and Support Services

A total of 65 (75%) of the students who responded to the question about assistance

Table 1. *Disclosure of Mental Health Condition*

Theme	*n* (%)	Theme	*n* (%)
Why students dislose	**73(76%)**	**Why students do not disclose**	**23 (24%)**
1. Help, accommodations, support services	54 (74)	1. Didn't know could or process for supports	5 (22)
2. For understanding & awareness from others	6 (8)	2. To maintain privacy/ not be judged	5 (22)
3. In case supports are neeed in future	5 (7)	3. Believed they would be fine without disclosing	5 (22)
4. At risk of failure	3 (4)	4. Diagnosis new or in-process	4 (17)
5. They were required or told to	3 (4)	5. Fear of repurcussions	2 (9)
6. To resolve a specific problem	3 (4)	6. Assumed limited or no benefit to mental health supports	2 (9)

Note. $N = 96$ students provided an open-ended response to why they did or did not disclose their mental health condition

from the university for their mental health condition responded positively. Sixty-two (90%) of the students reported that they received accommodations. Academic accommodations for testing and classroom assignments were the most frequent accommodations received by students followed by housing accommodations. In terms of supports, counseling and therapy were the most frequently reported. A list of specific accommodations and supports reported as received by students can be found in Table 2.

Students described a variety of reasons for not receiving accommodations. One student said, "I did ask for some but I don't really use it. Teachers ask at the beginning of the semester to say if you have disabilities or accommodations to talk to them after that class but I totally feel embarrassed doing that so I don't ask." Another student said, " I received a letter that I gave to my professors. However, they aren't understanding that I may have to miss class because I have a debilitating disease and mental health condition that sometimes means I can't attend every class." Other students simply said they did not receive the accommodations that they requested.

Of the 32 students who requested mental health services, only 13 (40%) received services, primarily counseling, from the university. Reasons given for not receiving services included a long waiting list, no counseling services that address the student's specific disorder, and discomfort with the type of service offered (e.g. group counseling). Of those students who did receive services, two-thirds were either very or somewhat satisfied with the services they received.

Responses by Disability Type

Subject responses on the survey were subsequently analyzed by the type of disability that the students reported. Other

Table 2. *Accommodations and Supports Received*

Theme	Coded responses (*n*)	*n*
Testing		49
	Extended time on tests (34)	
	Alternate tesing location (14)	
	Support for testing unspecified (1)	
Classroom		24
	Excused absences (10)	
	Lateness/ leaving early (4)	
	Priority registration (3)	
	Copy of notes (3)	
	Taking breaks (2)	
	Room change (1)	
	Earphones in class (1)	
Counseling/Therapy		20
	Counseling/therapy unspecified (9)	
	Indvidual counseling/therapy (5)	
	Group counseling/therapy (3)	
	Specific therapy (e.g. RO-DBT) (2)	
	Drop-in counseling/therapy (1)	
Assignments		19
	Extended time (18)	
	Alternate assignments (to oral presentations) (1)	
Housing		12
	Single dorm/ no roommates (8)	
	Priority housing (4)	
Technology		5
	Record lectures (3)	
	Laptop (2)	
Support Animal		4
	Emotional support animal on campus (4)	
Transportation		3
	Parking pass (2)	
	Campus car allowed (1)	

Note. $N = 65$ students provided an open-ended response to what accommodations and or supports they received as a result of disclosing their mental health condition; many students provided multiple responses, with all responses coded.

than the student whose primary disability was a mental health condition, students with autism (92%) followed by those with ADHD (90%) reported the highest percentage of mental health conditions. Students with mental health conditions had the lowest, yet still substantial, percentage of health conditions (58%). There were no significant differences in the type of mental health condition reported, with combined anxiety and depression the most frequently reported mental health condition.

Students with primary mental health conditions were most likely to disclose their condition to the university (94%) and were most likely to request accommodations and/or services for their condition/s. Most students with ADHD (86%) also disclosed their mental health condition and requested supportive accommodations and/or services. About two-thirds of the students with learning disabilities disclosed their mental health condition but nearly the same

percentage (62%) did not request assistance from the university. Students with primary diagnoses of medical conditions (e.g., asthma, diabetes, epilepsy) were the least likely to disclose their condition to the university 58% and least likely to request assistance. With the exception of those students with primary medical conditions, most students reported that they received accommodations from the university. Fewer than half of the students with medical conditions received accommodations even though they requested them. Across disability types, most students found accommodations helpful. Across most of the disability types, students did not report seeking services such as counseling for their mental health condition. However, approximately one-third of students with primary mental health conditions did seek such services. However, less than half of those students received services. While most students found services such as mental health counseling helpful, those with primary mental health conditions and ADHD were least likely to find those services helpful.

Results on the impact of mental health conditions indicated that students with primary mental health conditions were the most impacted by their condition, with 94% reporting either a significant or moderate impact. A significant percentage of students with ADHD (85%) reported their mental health condition/s to have a significant or moderate impact. The area of greatest impact differed somewhat by type of disability. Students with a primary mental health condition and those with learning disabilities were most likely to report impact across all areas of functioning (academic, social, and participation). Those with primary medical conditions reported the greatest impact of their mental health condition on social activities. Although impact on academic activities was frequently reported across disability types, students with learning disability indicated the least impact of their mental health condition on academics.

Discussion

This study examined self-reported mental health conditions of students with disabilities at a mid-size research university in the eastern United States. The results indicated that a high proportion of students with disabilities experienced mental health conditions that impacted their success at the university. The frequency of mental health conditions of all of the students with disabilities greatly exceeded that reported by the World Health Organization survey of universities in eight countries (Auerbach et al, 2018). In addition, students overwhelmingly reported that mental health issues had a negative impact on their postsecondary experience.

Although most students disclosed their mental health conditions to the university, a significant number chose not to do so. Student responses indicated that some felt that the disclosure process was too complicated or embarrassing. In a number of cases, students who disclosed their condition either did not receive mental health services for their condition or found the services they did receive to be inadequate or inappropriate. Several students reported being turned away from receiving mental health services or being discouraged by the long wait times to receive services. Others found the services to be inappropriate for their specific mental health condition.

These results should raise concerns for university personnel. They indicate that many students with disabilities also have mental health conditions that interfere with their success in one or more aspect of postsecondary life. Even when students disclose their condition they may be denied

appropriate services that would help them to better manage their condition. In some cases, students have been denied mental health services.

Students with autism (92%) and ADHD (90%) reported the highest percentage of mental health conditions. With the increasing prevalence of neurodivergent students attending college, this finding is of utmost concern. Neurodivergent students have been found to camouflage their disability often due to lack of understanding of others leading to negative mental health outcomes (Scheerer et al., 2020). It is imperative that universities center neurodiversity in diversity initiatives and eliminate barriers faced by neurodivergent students, for example through the establishment of disability cultural centers, faculty and staff training and comprehensive supports (Kuder et al., 2021).

Also of concern is the finding that fewer than half of the students with primary medical conditions received accommodations requested for mental health needs. This finding warrants targeted follow-up with students to identify the supports they need and how to increases access to mental health supports for students with intersecting mental health and medical needs. In contrast, a large number of students with learning disabilities (62%) did not request accommodations or supports for mental health conditions. One explanation may be that the supports students are already receiving for their learning disability also meet their related mental health needs.

Implications for Research

Recent literature has begun to consider the mental health of college students with specific disability labels. For example, college students with physical disabilities (Minotti et al., 2021) and autistic college students (Gunin et al., 2021) are reported to experience higher incidences of mental health concerns including depression and anxiety. As a result of the need to advance mental health supports for autistic college students, Gunin et al. (2021) published "a call for research" exploring four areas: factors affecting mental health; mental health supports; outreach; and, training and professional development. Findings of the present study suggest these recommendations should be extended to students with a variety of disability labels through a focus on each individual student and their intersectional identities.

Liu et al. (2021) recommend considering mental health supports "through the lens of sociocultural identities (to) facilitate a more thoughtful, systematic, and informed approach to target evolving student needs" (p. 3). Findings from the present study exemplify the need to center disability and disability identity in mental health and diversity initiatives. This recommendation aligns with existing research reporting adults with disability as more likely to report and require support for mental health concerns (Okoro et al., 2021).

Implications for Practice

The results of this study indicate that not only do a significant number of students with disabilities have mental health conditions that are associated with their disability but that these students may struggle to receive services and supports for their mental health conditions. Given the significant impact of these conditions, this should be a matter of concern to university faculty and staff.

It is incumbent on postsecondary institutions to examine how they are supporting students with disabilities who also have a mental health condition. Counseling staff need to be trained to recognize the mental health conditions that may co-exist with a disability such as ADHD or a learning disability or

physical disability. They need to consider how to support students who have relatively low incidence conditions such as OCD or PTSD as well as those experiencing higher incidence conditions such as anxiety and depression. Additionally, they need to consider the individual's student's preference for type of mental health service and explore new supports in a participatory manner with students in need of support. Some students may not be comfortable discussing their condition in a group setting, for example, or may benefit from regularly scheduled check-ins with a graduate student mentor trained in mental health. Other students may prefer quick access to specific resources on an as needed basis. Some students may prefer virtual counseling while others might prefer face-to-face sessions. It is apparent that an individualized approach to mental health supports is a necessity for college students with intersecting disabilities.

Limitations

Given the fact that this survey was conducted at only one university and that the number of respondents, while more than 200, represent only approximately 10% of the students at the university, this may not be a representative sample of this university or of all colleges and universities in the United States. However, the results for the frequency of mental health issues are in line with those found in several studies of much smaller samples of college students with autism (e.g. Jackson et al., 2018; McMorris et al., 2019).

Further, the number of students with primary mental health conditions may have been overrepresented in the sample due to the subject matter of the survey. Students with these conditions may have been more motivated to participate in the survey in order to express their concerns about the services offered for their conditions. It is possible that other students were motivated to participate for the same reason.

Conclusion

Postsecondary institutions of education, both in the United States and internationally, have seen a significant increase in the number of students identified with and seeking services for mental health conditions. Included among this population are students with disabilities who also have mental health conditions. Although previous research with both children and young adults has found these individuals to be at higher risk for mental health difficulties, research on the frequency, type, and impact of mental health conditions on the success of college students with disabilities has been lacking. The present study sought to begin to address this gap in the research literature by surveying students with disabilities at one university on their experiences with mental health conditions at the university. The results indicated that a significant percentage of these students experience mental health challenges. Moreover, these conditions frequently impact the quality of their college experience and performance. Of most concern were the findings that many students either did not seek services for mental health concerns, were denied services, or found the services they did receive were inadequate or inappropriate.

We hope that future research will expand this study across multiple types of postsecondary environments to determine whether these findings are true across postsecondary environments. We also hope that more widespread services and services that are more appropriate and effective will be provided so that all students in higher education can have the opportunity to be successful.

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Correspondence concerning this article should be addressed to: Amy L. Accardo, Department of Interdisciplinary and Inclusive Education, Rowan University, 201 Mullica Hill Road, Glassboro, NJ 08028. E-mail: Accardo@Rowan.edu

Case Studies on Students with IDD and Moderate to Extensive Support Needs: A Document Analysis

Jeongae Kang
Illinois State University

Kathryn Haughney
Georgia Southern University

Aftynne Cheek
Appalachian State University

Abstract: Preparing special education teacher candidates in an authentic learning environment is challenging, but case studies provide effective practice-based learning opportunities. Unfortunately, there are limited case studies available that focus on students with intellectual and developmental disabilities (IDD) and moderate to extensive support needs (M-ESN). Furthermore, the quality of case studies varies. We conducted a document analysis of the literature and resources to (1) identify case studies that included students with IDD and M-ESN, (2) examine the components/features of case studies that included students with IDD and M-ESN, and (3) create a list of existing case studies on this population that EPPs can use in their programs. Using recommendations from Chabon and Cohn (2011), we analyzed 14 case studies that met inclusion criteria. Results indicated that most case studies for this population are narratives about secondary level students and included varied components of the case studies. Implications, limitations, and future suggestions are discussed.

The role of educator preparation programs (EPPs) is to prepare teacher candidates to enter the field and to be successful in their teaching careers. However, creating authentic learning experiences during preservice teacher preparation is challenging, and most coursework occurs outside of the classroom setting (Brownell et al., 2019). In addition, since formal learning of higher education in general focuses on skill acquisition versus strategic, situational knowledge (Tynjala et al., 1997), one can assume that these foci extend to EPPs. These challenges are further exacerbated for EPPs that prepare special education teachers — special education teacher candidates require instruction that focuses on systematic and explicit instructional practices that meet the various needs of students with disabilities (Fuchs et al., 2015). Creating opportunities for special education teacher candidates to practice their newly acquired knowledge of systematic and explicit instructional strategies is vital for their success in the classroom.

Practice-based Opportunities in Special Education Teacher Preparation

Practice-based opportunities enable teacher candidates to learn how to be thoughtful with their educational choices so they can produce positive outcomes for students with disabilities (Brownell et al., 2019). Together, the Council for Exceptional Children (CEC) and the Collaboration for Effective Educator Development, Accountability, and Reform (CEEDAR) developed a framework for practice-based approaches to educator preparation — High Leverage Practices (HLPs). With this approach, teacher candidates have the opportunity to use the HLPs and revise their use based on feedback and experience (Grossman & McDonald, 2008). In other words, they are given the

opportunity to not only acquire skills but also practice their craft prior to entering the classroom.

Researchers indicate modeling, providing feedback, analyzing one's own performance, and interleaving may foster special education teacher candidate's knowledge acquisition (Brownell et al., 2019). These skills can be used independently or combined (Dunlosky et al., 2013). Modeling helps special education teacher candidates recognize features of effective instruction while feedback enables them to refine their instructional practices and to become more effective educators (Brock & Carter, 2017). By combining multiple cognitive demands during practice (i.e., interleaving), special education teacher candidates learn how to respond, naturally, in multiple scenarios. Brownell and colleagues (2019) identified eight practice-based opportunities (i.e., rehearsal, video analysis, and coursework aligned with field experiences) that incorporate the aforementioned effective practices. Among these is case learning.

Case Learning as a Tool for Practice-Based Opportunities for Teacher Candidates

Case learning involves the use of case studies to help teachers improve their knowledge and understanding of student learning (Brownell et al., 2019; Kennedy et al., 2012). Case studies are typically defined as narrative descriptions of teaching scenarios that provide teacher candidates a snapshot of the complex instructional needs and environment of a focus learner by providing "rich, authentic, and unique experiences that mirror the requirements of the classroom" (Lengyel & Vernon-Dotson, 2010, p. 255). Valverde-Berrocoso et al. (2020) noted that by design case studies are observational or intervention-based. Case studies help teachers develop critical analysis and problem-solving skills, reflect and take deliberate action, gain familiarity with analysis and action that takes place in complex situations, engage in their own learning, promote the creation of a community of learners (Merseth, 1996), and "bridge the gap between theory and practice" (Darling-Hammond, 2006, p. 103).

Case Studies in Special Education

When used in special education teacher preparation, case studies provide an avenue for teacher candidates to read about cases based on real students with disabilities, such as students with moderate to extensive support needs, in authentic contexts. Specifically, special education teacher candidates can read "context-specific narratives about students, teaching events, or teaching and learning environments; then analyze and interpret those narratives in the light of other knowledge from research, theory, and experiences" (Darling-Hammond, 2006, p.119). Coupled with scaffolding and guiding questions, case studies enable teacher candidates to actively engage in problem solving, discussion, and data analysis (Lengel & Vernon-Dotson, 2010). Finally, and perhaps most importantly, case studies provide a safe environment for special education teacher candidates to explore, apply ideas and solutions, and generalize knowledge and skills from their coursework into practice (Lengyel & Vernon-Dotson, 2010).

Despite the benefits of case studies, few case studies exist in special education. Of the available case studies on students with disabilities, some are content specific textbooks (e.g., Weishaar & Scott, 2005), while others focus on the support of case study methods for higher education teaching and learning (e.g., Boyle & Danforth, 2001), or minority students with disabilities who are placed in special education (Harry et al., 2007). Furthermore, fewer case studies exist

for students with moderate to extensive support needs. Most of those case studies are vignettes embedded in textbooks (e.g., Browder et al., 2020) or practitioner-oriented articles (e.g., Howard et al., 2020). Although these vignettes can be beneficial in *setting the stage* for a textbook chapter or an article, they often include brief situational descriptions in nature, lacking the detail needed for preservice teachers to analyze and interpret those scenarios for enhanced learning (see Storey, 2019). In addition, there is a lack of guidance on the quality of case studies requiring individuals to create their own. For example, Lengyel and Vernon-Dotson (2010) prepared preservice special education teachers using case studies, which included "several borrowed and self-developed pieces" (p. 252). In their article, they provided the requirements for this classroom-based assignment, noting the need to create case studies for special education teacher candidates.

The lack of available case studies in special education, specifically for students with moderate to extensive support needs, is concerning. Special education teacher candidates require specialized knowledge to educate students with disabilities, and to make adaptations and modifications to the standard course of study for students with moderate to extensive support needs (see Browder et al., 2020). Although EPPs are required to provide special education teacher candidates with a variety of experiences in different classrooms, some teacher candidates may only interact with students with moderate to extensive support needs during their culminating clinical experience (i.e., student teaching). Teacher candidates who have rarely worked with students who display challenging behaviors and extensive support needs may feel ill-equipped and reluctant early-career special education teachers (Weiss et al., 2018). Case studies offer special education teacher candidates more opportunities to learn about the unique learning needs of the students they will teach. This research serves as a preliminary attempt to identify the available resources and findings added to the current knowledge base because the components/features were reviewed. To our knowledge, quality indicators for instructional case study development do not exist; therefore, we were unable to evaluate the case studies for quality. Given the gap in the research, in our review, we used the term intellectual and developmental disability present with moderate to extensive support needs (IDD and M-ESN) when referring to students with moderate to extensive support needs, including autism spectrum disorder (ASD), intellectual disability (ID), developmental disability (DD), and multiple disability (MU). Therefore, the purpose of this review is to (1) identify case studies that included students with IDD and M-ESN, (2) examine the components/features of case studies that included students with IDD and M-ESN, and (3) create a list of existing case studies on this population that EPPs can use in their programs.

Method

We conducted a document analysis to examine case studies of students with IDD and M-ESN. Document analysis is a qualitative research method in which researchers use and code documents (e.g., case studies) for interpretation (Bowen, 2009). We followed the eight-step planning process described by O'Leary (2014) to identify and code the included documents. The process included creating a list of texts to explore (e.g., population, samples), considering how texts would be accessed with attention to linguistic or cultural barriers, acknowledging and addressing biases, developing appropriate skills for research, considering strategies for ensuring

credibility, knowing the data we were searching for, considering ethical issues (e.g., confidential documents), and having a backup plan.

Inclusion & Exclusion Criteria

Prior to beginning this document analysis, we aimed to search all available resources, which included databases, books, and online resources. To be included in this document analysis, case studies, as defined above, had to be (a) easily accessible via open-access journals or popular search engines (e.g., Google) or books, (b) published between 2010 and 2020, and (c) have descriptions of students with a diagnosis of moderate to extensive support needs. Additional definitions for the studied population of individuals described in the case studies as well as the types of case studies are necessary for replication. For this review, we defined IDD and M-ESN as individuals with significant support needs for intellectual functioning and adaptive behavior that originates prior to age 18 (Shalock et al., 2010). Therefore, the following disabilities were included in our conceptualization of IDD and M-ESN: ASD, ID, DD, and MU. Note: The disabilities above were only included if they occurred in conjunction with a moderate to severe intellectual disability. Case studies were excluded from this document analysis if authors included descriptions of students with mild ID (IQ > 55) or mild disabilities (e.g., specific learning disability), or if we were unable to determine if the student had IDD and M-ESN. In document analysis, three main forms of documents include public records, personal documents, and physical evidence (O'Leary, 2014). In this review, we defined documents as physical evidence — literature and all other available resources. However, resources that were not easily accessible (e.g., required a paid subscription), had less than have of the common components (i.e., coded features discussed below), and vignettes (i.e., narrow focused descriptions relevant to one dimension the individual) were excluded from this study.

Search Sources

During our initial search, we discovered a dearth of literature describing students with IDD and M-ESN that met our inclusion criteria. We searched the electronic databases (i.e., Academic Search Complete, Proquest, Sage Complete, JSTOR, WorldCat.org, EBSCOHost, Ed Research Complete, and Google search/scholar for web resources) for peer-reviewed publications using the following search terms *severe, most significant, low-incidence disability* with combinations of the words *case study*, *assessment, IEP, sample, example, scenario, minority, diverse, early childhood,* and *psychological*. This initial search yielded eight documents that met our criteria (e.g., Hostyn & Maes, 2013). We also conducted ancestral and manual searches of the reference lists of previously identified resources (e.g., *Teaching Exceptional Children*) which yielded nine documents. Finally, we conducted a Google search, which became the main source of identifying case studies that met inclusion criteria. Of an initial 310 case studies searched, 24 were identified for potential inclusion in a formal search with an additional 6 identified through ancestral search. Each of the 30 case studies was reviewed using the procedure.

Coding Procedures and Interrater Reliability

The initial search was limited to case studies published between a range of dates that we determined would likely produce higher quality results, the previous 10 years. We then developed a coding table and coded each case study for the inclusion or absence of the following criteria: (a) citations/location of article, (b) format of the case study (narrative,

IEP, video), (c) topic, focus, and setting (d) gender, (e) disability, (f) family background information, (g) school background information, (h) student dreams or aspirations, (i) academic strengths, (j) functional/behavioral strengths, (k) areas of academic need, (l) areas of functional/behavioral need, (m) personal preferences, (n) family priorities, (o) cultural and linguistic diversity, (p) evaluation results, (q) raw data, (r) IEP goals and objectives, (s) antiquated language, (t) curriculum based matrix, (u) daily schedule, and (v) accommodations. Also, we included anecdotal notes, as needed, for further discussion.

Next, we conducted interrater reliability (IRR). Each article was initially coded by the first and third authors, at which point many case studies were excluded due to obvious misalignment with the inclusion criteria (e.g., inaccessible through open access resources, database criteria limited to 2010 to present). Kratochwill et al. (2010) recommend that IRR should be conducted on at least 25% of the data using the following formula: agreements/ agreements + disagreements; however, due to an abundance of caution and given the spectrum of formats across cases, the second author coded 50% of the documents. Based on this round of initial coding and IRR (which included group discussion and consensus around initial inclusion criteria and coding table development), we determined that 14 out of the 30 documents met inclusion criteria. Nine were eliminated for failing to fit the criteria for describing individuals with mild disability, one was eliminated as a duplicate, and several more (n=6) were eliminated for failing to provide sufficient information (e.g., vignettes). The initial IRR of the 14 case studies was 96.44% agreement, and all three authors discussed coding clarifications and resolved disagreements (coded again when necessary). Final IRR was 98.3% agreement across all categories, with a range of 91.4% to 100% agreement.

Conceptual Framework for Analysis

As stated above, to our knowledge, there are no quality indicators for drafting instructional case studies or for determining the quality of their components; therefore, we reviewed relevant literature and books to develop a conceptual framework that would allow us to conduct a deeper analysis of the case studies included in this document analysis. We determined that the work of Chabon and Cohn (2011) was applicable for use in this document analysis because their textbook included exemplary case study examples with comparable components that could be applied to special education teacher preparation. In their textbook, *The Communication Disorders Casebook: Learning by Example*, the authors discuss common elements of quality case studies, which should include the following six categories: (a) conceptual knowledge, (b) a short introductory paragraph establishing a challenge to consider, (c) evaluative findings, (d) description of the course of treatment, (e) further recommendations, and (f) references. Using the components of quality case studies described in Chabon and Cohn (2011), we infused the 22 elements from the coding criteria described above to create our conceptual frame for analysis: six broad categories and 22 sub-categories (see Table 1). However, we did not include further recommendations and references in this review because they are neither typically included in case studies nor the focus of this review.

Results

In this section, we share our specific findings from this review on 14 case studies. The findings were organized by our conceptual framework: (a) contextual knowledge, (b)

background information, (c) evaluation findings, and (d) goals and interventions. Table 2 includes the list of case studies and their summary and sources. We also provide Appendix A, which details our findings for each of the 14 case study reviews based on each coding category.

Case Study Framework Category 1: Contextual Knowledge

Format. Format was defined as the type or format of the case study (e.g., narrative, multimedia). All case studies of our review (*n*=14) were text-based. Six case studies used narrative in describing each case. Seven case studies used both narrative and IEP format, utilizing Present Level of Academic Achievement Functional Performance (PLAAFP) statements and Individualized Education Program (IEP) goals in describing their case students (e.g., Missouri Department of Elementary and Secondary Education [MO DESE], n.d.; National Technical Assistance Center on Transition [NTACT], -a, -b, -c, -d; Whole Schooling Consortium [WSC], n.d.). There was only one case study (NCACT, n.d.-e) that used an IEP format in describing its case student.

Focus, Setting, and Context. We defined *focus* as the topics of case studies covered (e.g., academic, functional/behavior, transition) and *context* as the overall descriptions of curriculum or specific content areas covered or to encompass case studies. Two case studies (MO DESE, n.d.; NTACT, n.d.-d) covered academic, functional/behavior, and transition in describing case students. Three case studies (BYU online, n.d.-a; unknown, n.d.- b; WSC, n.d.) focused on both academic (e.g., ELA, math, science) and functional topics (e.g., social communication skills, behaviors). While two case studies (Next Generation Science Standards [NGSS], n.d.; unknown, n.d.-a) only discussed academics, Hostyn and Maes (2013) discussed behavioral/functional areas only. Six case studies (MO DESE, n. d; NTACT, n.d., -a, -b, -c, -d, -e) covered transition. Besides, one case study (Janssen et al., 2019) focused on transgender youth, and one case study (BYU online, n.d.-b) only described its case student, Shawn, without any specific focus area.

Setting is the description of the placements of each case. Twelve case studies used K-12 school classrooms as settings, including full inclusive classrooms (NGSS, n.d.; WSC, n.d.; *n*=2), self-contained classrooms or school (unknown, n.d. -a, b; *n*=2), the combination of inclusive classroom or self-contained classrooms and vocational programs (MO DESE, n.d.; NTACT, n.d.-a,-b,-c,-d,-e; *n*=6), and no specific information (BYU online, n.d.-a, -b; *n*=2). Two case studies (Hostyn & Maes, 2013; Janssen et al., 2019) used treatment centers as settings.

Age and Grade. Our review includes 16 students from the 14 case studies. All students are secondary levels, including middle school (*n*=6) and high schools (*n*=10). Each case study included one case student each, except NGSS (n.d.) that included three students with moderate to extensive support needs to describe how to incorporate universal design for learning into NGSS standards.

Antiquated Language. We defined antiquated language for the use of non-person-first language or language that is no longer used in current literature (e.g., mental retardation, referring to transgender participants with inappropriately gendered pronouns). Of those identified, 11 out of 14 case studies did not use antiquated language. Two case studies (unknown, n.d.-a, -b) used mental retardation (MR) to describe

Table 1. *Chabon & Cohn Coding Categories and Equivalent Coding Elements in this Review*

	Definition of Common Case Study Elements (Chabon & Cohn, 2011)	Equivalent Elements from Identified Case Studies for this Review
Conceptual Knowledge	Information necessary to adequately interpret and problem-solve the case	• **Format** • **Focus, Settings, and Context** • **Qualifying Disability Category(ies)** • **Age/Grade** • **Person-first Language**
Background Information	Historical information needed to understand the case (including pertinent facts, significant developments, and recent developments)	• **Gender/Identity** • **Family Information** • **School Information** • **Academic Strengths** • **Academic Needs/Weaknesses** • **Functional/Behavioral Strengths** • **Functional/Behavioral Areas of Need/Weaknesses** • **Student Personal Preferences/Priorities** • **Family Personal Preferences/Priorities** • **Cultural or Linguistic Diversity Considerations**
Evaluative Findings	Presentation of best data, clinical judgements, and individual case needs	• **Evaluation Results** • **Raw Assessment Data**
Goals and Interventions	Details the procedures followed for the current supports, interventions, and responses to interventions	• **Daily Schedule** • **Accommodations in Place** • **IEP Goals and Objectives** • **Curriculum Matrix (based on IEP Goals)** • **Dreams of the Student, Post-secondary Goals/ Transition Plan** • **Vision of the Family/Community**
Further Recommendations	Review the current treatment and develop/rework hypotheses or suggestions for increasing positive outcomes	Included for "observation-based" case studies; however, not typically included in "intervention-based" case studies as recommendations are developed in the teaching and learning process of case study examination
References	List of sources used within the cases for the interest and aid of the reader	Not typically included, as descriptions of copyrighted material, specific evidence-based interventions, and texts are general

Note. Bolded elements were included in the coding of the current case study review.

Table 2. *Summary of Case Studies In this Review*

References of Case Studies	Summary on case studies	Disability Category(ies)
BYU Online (n.d.-a).	Isabell, an 8th grade 13 years old, female high school student diagnosed with down syndrome and intellectual disability. Her reading and math performances are at 1st grade levels. Isabell is social and demonstrated high task completion most of the time. She can communicate her needs and uses self-talks to regulate her emotion, but this does not work when she feels frustrated or angry.	ID & Down Syndrome
BYU Online (n.d.-b.)	Shawn, an 8th grade, 13 years old, African American male high school student diagnosed with ASD. Shawn's family and school background information is included, but not specific focus area of information.	ASD
Hostyn & Maes (2013)	Chris, a 16-year-old male student diagnosed with a profound intellectual multiple disability (rather write as IDD/MD) and epilepsy. Chris does not have any functional communication, so this case study has focused on improving communication skills with a staff member at a treatment facility.	IDD & Epilepsy
Janssen et al. (2019)	JB, a 13-year-old transgender student diagnosed with severe developmental disabilities, ASD and gender dysphoria. Setting for this case study is at a residential treatment center.	ASD, DD, & Gender Dysphoria
Missouri Department of Elementary and Secondary Education [MO DESE] (n.d.)	Student A, a 17-year-old, 12th grade female high school student diagnosed with intellectual disability. Her full-scale IQ score is 67, and she has the same level of adaptive behavior skills. She is currently working in a paid position at the hospital. She will graduate high school at the end of the school year and has interests in working on health care and going to college. She also wants to move into the supported living apartment sometime in the future.	ID
National Technical Assistance Center on Transition (NTACT, n.d.-a)	Alex, a 17-year-old male, high school student diagnosed with ASD. Alex spends most of his day with his peers without disabilities except two out of seven periods a day. He takes behavior, communication, and organizational skills with his peers with disabilities. He is currently having a paid part-time position responsible for data entry in an office supply retail store and wants to continue working in this position in the future. He receives weekly on-the job support from a job coach and his mother wants to know how to access the support after high school.	ASD
NTACT (n.d.-b).	Lilly, a 20-year-old, high school female student diagnosed with a severe and profound intellectual disability and multiple disabilities. She has limited functional communication; however, AAC does not work for her. Lilly participates in the alternative assessments and takes vocation, academic, and social skills in self-contained classrooms	IDD & MU

	with her peers with extensive needs, except adapted PE. Lilly participates in school-based enterprise "coffee shop" and community-based work experience.	
NTACT (n.d.-c.)	Lissette, a 20-year-old female high school student diagnosed with down syndrome and moderate intellectual disability. She went through multiple surgeries to correct scoliosis and uses canes. After graduating high school in six months, Lissette plans to take community college courses on academic and career preparation. She has worked at a pretzel shop in the mall but wants to work at more chain-based restaurants. Her parents address some concerns on her safety (e.g., remembering her employee identification numbers and cell phone number) and job readiness skills.	ID, Down Syndrome, & Scoliosis
NTACT (n.d.-d.)	Carla, a 13-year-old, 8th grade female student diagnosed with moderate intellectual disability. She has delays in academic and functional skill difficulties. She spends most of her day in self-contained classes, except Nutrition, PE, and Chorus. Carla is making good progress on her annual IEP goals. Carla wants to go to college to study hospitality. Although she is not required for the transition meeting, her family requested to start discussing it because they feel Carla is ready.	ID
NTACT (n.d.-e.)	Mirah, a 12th grade female high school student diagnosed with moderate intellectual disability. She also had scoliosis. She receives English and math classes in the inclusive classroom and life skill and employment classes in a resource room. Her IEP formatted case study has a strong attention to her transition plan after high school.	IDD & Scoliosis
Next Generation Science Standards (NGSS) (n.d.).	Mr. O, a science teacher at Grove Middle School, shows how to use universal design for learning (UDL) for the success of all 6th grade students in the inclusive science class, including students with disabilities. Janette and Nicole are students with intellectual disabilities, and they receive instructional support from their paraprofessionals. Kevin is diagnosed with autism and shows difficulties in social skills.	ID or ASD
Unknown (n.d.-a).	Michelle is a 7th grade student who is diagnosed with intellectual disability and down syndrome. She is enrolled at a life skill program. Her IEP team focuses on her mathematical difficulties and provides accommodations and assistive technology to meet her needs.	ID & Down syndrome
Unknown (n.d.-b).	Peter, a 17-year-old, 11th grade, male student diagnosed with developmental disability. He is non-verbal. He works at a non-diploma, school-to-work program at a high school for students with disabilities. His goal is to improve his communication skills. For his communication needs, he has been using an assistive technology, Say It! SAM communicator.	DD
Whole schooling Consortium (n.d.).	William is a fifteen-year-old, 9th grade student with ASD. He mostly stays in the mainstream classes except science. He has strengths in academics, but he struggles with inference-based reading comprehension and higher-level mathematics. William also needs support in handling his emotions (e.g., frustrations) and using age-appropriate conversation skills, maturity, and social skills.	ASD

Michelle's and Peter's disabilities. One case study (Janssen, 2019) appeared to misuse gendered language to describe a transgender female participant, but their intention (likely to represent the gender identity of the participant as it changed across instances of reference) was unclear.

Case Study Framework Category 2: Background information

Diversity Considerations: Cultural, Gender/Identity. The case studies include six male students, nine female students, and one transgender student (Janssen et al., 2019). None of the included case studies described the student's race, ethnicity, or cultural and linguistic identity in relation to the majority culture of the scenario.

Family information and School information. Family information includes family members (e.g., caregivers, parents, siblings) and living environment. Out of 14 case studies, eight case studies (BYU online, n.d., -a, -b; Janssen et al., 2019; MO DESE, n.d.; NTACT, n.d., -b, -c,-d; WSC, n.d.) included family information. School information includes any information about classroom environment (e.g., climate or settings), peer students (e.g., peers with disabilities or not, interaction), curriculum (e.g., subject, topics), personnel (e.g., teacher, service providers, paraprofessionals), program (e.g., related services, placements), and any other support for case students (e.g., manipulatives, behavior management). All case studies except Hostyn and Maes (2013) included school information.

Academic and Functional/Behavioral Information. Seven case studies (BYU Online, n.d.-a; NTACT, n.d. -a, -b, -d, -e; unknown, n.d.-b; WSC, n.d.) included both of the student academic and functional or behavioral information strengths and weaknesses. While three case studies (Hostyn & Maes, 2013, Janssen et al., 2019; MO DESE, n.d) include behavior/functional-related information, three case studies (BYU online, n.d. -b, NGSS, n.d, unknown, n.d.-a) include only academic-related information.

Student and Family Preferences/ Priorities. Student preference included specific details about the student hobbies, interests, and activities. We found that eight case studies (Janssen et al., 2019; MO DESE, n.d., NTACT, n.d.-a, -b, -c, -d, e, WSC, n.d.) included such details in describing the case students. Janssen et al. (2019) is a case study of a male middle school student experiencing gender variance. Family priority describes family preference of child development (e.g., social, physical), family resources (e.g., care, transportation), or evening time routines. We found six case studies (MO DESE, n.d.; NTACT, n.d. -a,- b, -c, -d, -e) that included family priority in describing the case students. Examples of family priorities in our review include transportation to college or future workplaces, job readiness skills, class schedule, class content, and safety for case students.

Case Study Framework Category 3: Evaluation findings

Qualifying Disability Categories. Six out of 14 case studies described their students with a single diagnosis of a disability, including ASD (n=3), ID (n=2), or DD (n=1). NGSS case study included two students with ID and one student with ASD. The rest of the seven case studies were double coded because of more complicated cases or comorbid conditions. For example, two of the eight cases included individuals with scoliosis and ID or IDD (NTACT, n.d.-c, -e). Two case studies included students with ID and down

syndrome (BYU Online, n.d.-a; unknown, n.d.-a), while two case studies included a student with IDD and epilepsy (Hostyn & Maes, 2013) or with multiple disabilities (NTACT, n.d.-b). Janssen and colleagues (2019) describe JB, a 13-year-old transgender student diagnosed with developmental disabilities, ASD, and gender dysphoria.

Evaluation Results and Raw Assessment Data. Five case studies (Hostyn et al., 2013; Janssen et al., 2019; MO DESE, n.d.; NTACT, n.d.-d; unknown, n.d.-b) included evaluation results with numeric raw assessment data (e.g., observation, formative, summative, educational, or psychological test scores), supporting educational or IEP goals. Four case studies included partial evaluation results, including specific assessment names without numerical data or inconsistently providing raw assessment data (NTACT, n.d.-a, -b, -c, -e). However, five case studies (BYU Online, n.d.- a, -b; NGSS, n.d.; unknown, n.d.-a; WSC, n.d.) did not provide any related information.

Case Study Framework Category 4: Goals and Interventions

Nine case studies include either SMART IEP goals or post-secondary/ transition goals (MO DESE, n.d., NTACT, n.d.-a, -b-, -c, -d, -e; unknown, n.d.-a, -b; WSC, n.d.). Four case studies showed IEP implementation using a curriculum matrix (NTACT, n.d.-a; WSC, n.d.), daily schedule (WSC, n.d.), or accommodations (MO DESE, n.d.; NTACT, n.d.-d.; WSC, n.d.).

Discussion

The purpose of this document analysis was to identify case studies on students with IDD and M-ESN and to examine the components and features of each to support EPPs in special education teacher candidate preparation. Results indicated the lack of readily available case studies focusing on students with IDD and M-ESN. Our findings also confirmed the need to develop more detailed case studies that reflect comprehensive student characteristics that teacher candidates will encounter in their future careers. Although the identified subset of available case studies may not be large enough (n=14) to provide a sufficient understanding of component quality, some indications in the literature and trends within this subset can start the conversation.

Case Study Learning as a Practice-Based Opportunity

The authentic student information from the case studies plays a critical role in providing teacher candidates opportunities to identify, assess, and intervene in student learning challenges (Richards et al., 2003). Therefore, EPPs need to use case studies to prepare special education teacher candidates for authentic learning opportunities. However, we found only 14 case studies that focus on students with IDD and M-ESN, which leaves few options for EPPs. Our findings indicated that case studies in special education teacher preparation may include fewer broadly available cases or that the developed case studies are not consistently available to the public. For example, several case studies identified in the initial search were no longer publicly available when coding of the identified studies began. Our document analysis reveals a critical need to develop more case studies and make them easily accessible for EPPs.

Case Study Components and Contents

The identified case studies showed a general lack of consistency in providing preliminary student information. In our review, a majority of case studies included student basic information, including contextual knowledge for the application of the case (e.g., setting, age/grade) and background information for

the case student (e.g., family and school information, academic and functional performance), but more comprehensive descriptions were inconsistent. Similarly, case studies include inconsistent evaluation findings (e.g., student evaluation data, raw assessment data). Solid student basic information and evaluation data must be helpful for teacher candidates to develop case students' present levels of performance, setting individualized goals, and suggest possible evidence-based practices. However, it would not be helpful for special education teacher candidates to use "borrowed or self-developed" (Lengyel & Vernon-Dotson, 2010, p. 252) case studies without details needed in analyzing and interpreting the data. When a set of case studies describing diverse individuals share common components, the quality of the content for each component determines the quality of the case study (Stonier, 2019). However, clear guidelines on making quality case studies are hard to locate. Case studies with consistent and thorough details will enhance the learning of teacher candidates by identifying the needs of students and coming up with support for students. Therefore, examining the features of case studies and to what specific and detailed information would be necessary steps for the special education teacher preparation. Furthermore, more discussion on developing quality indicators for quality case studies is needed.

Although the framework of Chabon and Cohn (2011) guided us in identifying components and features of case studies on students with IDD and M-ESN, not all features/components of case studies are consistently applicable to preparing special education teacher candidates. For example, about one-third of the case studies we reviewed did not include goals and interventions and thus were more observational in nature. However, case learning opportunities with discussion questions may help teacher candidates' active engagement instead of providing solutions. Storey (2019) published a collection of case studies examining post-school and adult transitions that reflect these principles. The author included case studies without analysis designed to support student problem-solving (which were not included in this analysis for fitting the authors' definition of a vignette). Paired with EPP course guidelines, observational case studies could amplify learning opportunities (Christ et al., 2017).

Case Study Subjects and Topic Diversity

To provide more learning opportunities helpful for teacher candidates, case studies on students with IDD and M-ESN needs need to represent the diversity in the K-12 schools in terms of student groups. However, our findings show that available case studies do not sufficiently represent the student group populations. For example, all students of the 14 case studies were secondary level students with IDD and M-ESN. Given that typical special education teachers will work for students across grade levels from preschool through post-secondary, more case studies describing younger children with IDD and M-ESN are needed.

In addition, we found none of the 14 case studies included any considerations of culturally and linguistically diverse backgrounds with no mentions of diversity situated within the majority culture. This precludes any examination of intersectionality of the case study participants. Although it is critical for special education teachers to create safe, inclusive, culturally responsive learning environments for all children (CEC, n.d.), it is alarming that none of the case studies included case students from diverse backgrounds nor provided a description of included case student's racial, ethnic, or cultural diversity

implying a color-blind racial ideology (Neville et al., 2013). To provide a description of diverse students while ignoring their backgrounds is to assume that background factors do not influence the case enough for mention. The inclusion of racial, ethnic, and cultural details in case studies can encourage preservice teachers to reflect on their influence and may guide those who use them to include these considerations in the future, thus addressing disproportionality with greater awareness. Preparation programs need to provide sufficient learning opportunities for teacher candidates to develop and demonstrate appropriate pedagogical skills in contextually situated case examples.

This gap also suggests the need to expand the scope of student diversity. In our review, Janssen et al. (2019) included one transgender student with disabilities. However, the focus of the narrative addressed gender dysphoria (a highly controversial diagnosis) of the case student without examining the case as situated within a subverted gender group, which is why when cultural diversity is considered intersectionality, this case study would not apply. Although we did not code Janssen et al. (2019) for culturally linguistic diversity, applying a broad definition of cultural diversity may be pressing. One important note on the use of antiquated language in this case is how the author's intentions were unclear. Although they appeared to misuse the gender pronouns of a transgender woman, the authors were likely reflecting the participant's preference to change gender pronouns when describing different time periods of their life (e.g., when she switched to she/her pronouns, the description of the participant in the article narrative did the same). This is still an example of antiquated language without context and explanation from the authors. The number of transgender youths has remained steady over time; however, estimates of transgender youth have been only half those recorded by recent statistical modeling (Herman et al., 2017) a failing which could obscure student needs and negatively affect student quality of life and school success. It is evident that continuous discussion is needed for how teachers need to create a safe school environment by striving to understand diverse needs and cultures.

Case Study Formats. Our review also found that all case studies are mainly text-based or narrative. It was surprising because the conversation on the need for developing multimedia and online video case studies started from the late 1990s as an effective teacher preparation tool (Cannings et al., 2002). Beyond the benefits of case studies mentioned earlier in this article, to provide more authentic learning information, case studies need to be adapted to more diverse formats, including video or multimedia case studies (Grossman et al., 2005; Kennedy et al., 2012). In particular, video case studies are known as effective for capturing the authenticity of the cases and context, including voice, body language and interactions, and classroom contexts that help teacher candidates better sense the big picture about the case (Koc et al., 2009). Despite the prevalence of case study learning methods in e-learning educational research literature (Valverde-Berrocoso et al., 2020), this review identified no searchable and relevant video examples meeting the inclusion criteria. Using multimedia tools significantly affected teacher candidates' learning (Kennedy et al., 2012), mainly because visual and sound features help use less cognitive loads (Rosen, 2008). Therefore, more case studies need to show comprehensive case students' learning profiles in various ways to support special education teacher candidates engaging problem solving by assessing

student needs, setting the goals, and planning for effective strategies. For example, Modules Addressing Special Education and Teacher Education (MAST) is a series of multimedia formatted PD modules. If the modules incorporate quality case study components that focus on instruction for students with moderate to extensive support needs, EPPs could put them to great use.

Limitations

There are four main limitations to this study. First, the limited number of case studies we reviewed might have yielded the lack of diversity of case study components or features. Of those reviewed, case studies considered "observational" may have lacked enough content to be considered case studies as opposed to vignettes. Second, the inclusion criteria for the search allowed us to explore the non-traditional peer-reviewed resources available for open access and left room for subjectivity despite high levels of interrater agreement. Third, we did not coded intersectionality separately that could have produced a different result. Fourth, the search allowed for the review of resources that were available to the researchers at the time but were soon thereafter unavailable. Thus, this review can only serve as a snapshot of what was available rather than as a list of recommended resources for teaching professionals. The fields need to identify or produce a wider variety of open-access case studies and develop a framework targeting special education case studies (including discipline-specific elements for analysis).

Implications for Researchers and EPPs

Based on our findings, EPPs can provide more authentic learning opportunities by using case studies for special education teacher candidates that are comprehensive enough that teacher candidates can identify and assess learning challenges in students and practice intervention planning (Richards et al., 2003). Subsequent inquiry describing the impacts of case study learning in teacher preparation would help to inform this particular gap in evidence-based practice for special education learning focused on moderate and significant disabilities. Additionally, qualitative and mixed-method studies may consider providing enough descriptive content on research participants such that it can be used as a case study (e.g., Hostyn & Maes, 2013; see the component list in Table 1). However, not all research case studies are applicable for instructional use. Although quality indicators for qualitative research are available, for which case study research is a part of (see Brantlinger et al., 2005), they are not intended for instructional case studies. Furthermore, it is uncertain whether the quality indicators could be applied to teacher preparation because they might not incorporate the learning and teaching process. Providing standards to develop high-quality instructional case studies would help recognize potential research case studies for instructional use and develop high-quality instructional case studies.

Collaboration for Free and Accessible Resources. Findings of this study offer insights of the need for EPPs to collaborate with other agencies and programs in aggregating resources for common goals and develop solid case studies to prepare for effective teachers and to evaluate the effectiveness of any developed case studies to improve (e.g., Kazemi et al., 2007). Several case studies of our review were available on the website of state departments of education (e.g., MO DESE) or the website of transition technical support agencies (e.g., NTACT). Likewise, collaboration on the national and state levels can stimulate and support greater consistency for building useful and high-quality case studies based on school-age student experiences. Within K-12

schools, teacher educators should consider collaborating with in-service teachers or school districts to collect more authentic examples of student case studies.

Increased Diversity and More Accurate Representation. In aggregating or developing case studies, EPPs need to keep in mind that case studies should represent a diversity closely reflective of the student population, articulate various theoretical frameworks, provide assessment results and raw data, a variety of case study formats, and most importantly contain enough relevant information to support student problem-solving. In this way, the discipline of special education may support critical thinking in teacher preparation through case study learning with consistently high quality. In order for case studies to truly reflect the authenticity and diversity of students with disabilities, Stonier (2019) suggests that case studies are not amalgamations of researcher experiences but instead represent "singular, verifiable examples of practice" (p. 215).

A Proposed Solution

Barriers in the search for open case studies describing students with moderate or extensive support needs included a lack of searchable keywords for greater access, an absent culture of sharing around real student cases, a lack of consistency and clarity of elements to increase applications, and a little variety of examples. In response, the authors propose a stable space for repository of special education case studies to be shared, as is maintained in other academic fields with similar needs (e.g., Clinical Case Studies https://journals.sagepub.com/aims-scope/CCS). The journal identifies common features and provides consistency of information across all published cases. Any future repository for case studies describing students with extensive support needs should be open-access, online, and describe extensive learning profiles of diverse experiences.

Conclusion

Case study learning has the potential to support expanded and enriched experiences for teacher candidates with applications in online learning, collaborative practice, and much more. The authors reviewed the literature for potential quality indicators for coding and found limited guidance. This analysis revealed indications of case study standards based on a few relevant textbooks and varied other sources with inconsistent web-based access. Only 14 case studies were identified and reviewed, and findings indicate necessary expansions in the amount of detail provided to support each case (with urgent need for greater cultural and linguistic diversity considerations), and in the representation of diverse needs across vast spectrums of authentic student experiences. This document analysis justifies the formation of a special education repository and sharing platform, possibly a dedicated new journal, supporting case study learning that describes the experiences of students with IDD and M-ESN.

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Correspondence concerning this article should be addressed to Jeongae Kang, Illinois State University, Department of Special Education, DeGarmo Hall 537, Campus Box 5910, Normal, IL 61790-5910. E-mail: jkang16@ilstu.edu

Appendix A. *Coding Table of Document Analysis of Case Studies*

	BYU Online n.d.		Hostyn & Maes 2013	Janssen et al. 2019	MO DESE n.d.	NTACT n.d.					NGSS n.d.	Unknown n.d.		WSC n.d.
	a	b				a	b	c	d	e		a	b	
Conceptual Knowledge														
Form														
Narrative	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓	✓	✓	✓
IEP Format	x	x	x	x	✓	✓	✓	✓	✓	✓	x	x	✓	✓
Focus														
Academic	✓	x	x	x	✓	x	x	✓	✓	x	✓	✓	✓	✓
Functional	✓	x	✓	x	✓	x	x	✓	✓	x	x	x	✓	✓
Transition	x	x	x	x	✓	✓	✓	✓	✓	✓	x	x	x	x
Other	x	x	x	✓	x	x	x	x	x	x	x	x	x	x
No focus	x	✓	x	x	x	x	x	x	x	x	x	x	x	x
Settings, Context, and Purpose														
School, including non-diploma school	✓	✓	x	x	✓	x	x	x	x	x	x	x	✓	✓
SPED (e.g., self-contained classroom)	x	x	x	x	x	x	x	x	✓	✓	x	✓	✓	✓
Inclusion	x	x	x	x	x	x	x	x	x	✓	✓	x	x	x
Transition vocational training	x	x	x	✓	✓	✓	✓	✓	x	x	x	x	✓	x
Treatment facility	x	x	✓	✓	x	x	x	x	x	x	x	x	x	x
Assistive technology	x	x	x	x	x	x	x	x	x	x	x	✓	x	x
Age/ grade														
Elementary school	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Middle school	x	x	x	✓	x	x	x	x	✓	x	✓	✓	x	x
High school	✓	✓	✓	x	✓	✓	✓	✓	x	✓	x	x	✓	✓
Gender/ identity														
Male	x	✓	✓	x	✓	✓	x	x	x	x	✓	x	✓	✓
Female	✓	x	x	✓	x	x	✓	✓	✓	✓	✓	✓	x	x
Non-binary	X	x	x	x	x	x	x	x	x	x	✓	x	x	x
Antiquated Language	x	x	x	x	x	x	x	x	x	x	x	✓	✓	x
Background Information														
Family	✓	✓	x	✓	✓	x	✓	✓	✓	x	x	x	x	✓

School	✓	✓	x	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓
Academic														
Strengths	✓	✓	x	x	x	✓	✓	x	✓	✓	x	x	✓	✓
Weakness	✓	✓	x	x	x	✓	✓	✓	✓	✓	x	✓	✓	✓
Functional/Behavioral														
Strengths	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	x	x	✓	✓
Weakness	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	x	x	✓	✓
Family Preference/priority	x	x	x	x	✓	✓	✓	✓	✓	✓	x	x	x	x
Cultural/ Linguistic/ Diversity Considerations	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Evaluation Findings														
Disability Categories														
ASD	x	✓	x	✓	x	x	x	x	x	x	x	✓	x	✓
ID	✓	x	x	x	✓	x	x	✓	✓	x	x	x	x	x
DD	x	x	x	x	x	x	x	x	x	x	x	x	✓	x
IDD/MD	x	x	✓	x	x	✓	✓	x	x	✓	x	x	x	x
Other	✓	x	✓	✓	x	✓	✓	✓	x	✓	✓	✓	x	x
Evaluation Results	x	x	✓	✓	✓	/	/	/	✓	/	x	x	✓	x
Raw Assessment Data	x	x	✓	✓	✓	/	/	/	✓	/	x	x	✓	x
Goals and Interventions														
IEP goals and objectives	x	x	x	x	✓	✓	x	x	/	✓	x	✓	✓	✓
Curriculum Matrix	x	x	x	x	x	✓	x	x	x	x	x	x	x	✓
Daily Schedule	x	x	x	x	x	x	x	x	x	x	x	x	x	✓
Accommodations	x	x	x	x	✓	x	x	x	✓	x	x	x	x	✓
Post-secondary goals/ Transition Plan	x	x	x	x	✓	✓	✓	✓	✓	✓	x	x	x	✓

Note. All coding categories were marked either present (✓) or absent (x), except for two following categories.

Evaluation results were marked as follows: ✓ = Results of evaluations are provided with numerical data, / =Results for specific assessments are included but the numerical data are not provided, x = Specific assessments are not named.

Raw assessment data were marked as follows: ✓ =Data on an educational goal or lesson objective were described. Can be observational, formative, summative, or the score sheet for an educational or psychological test. /= If the data are mixed (name and score, but variations among the test), code as partial and make comments. x = no data were included.

How to Avoid Predetermination of Student Eligibility, Services, and Placement

Jo Nell Wood
Saint Louis University

Nikki Murdick
Saint Louis University

Amanda Wood
Liberty High School

Abstract: Although school district members of an IEP team may meet prior to the scheduled IEP meeting to organize and plan the agenda, decisions on the child's eligibility, services, and placement made without parental input are illegal. "'Predetermination of placement' could include actions such as fully developing and finalizing an IEP prior to meeting with the parents, or asking them to sign an IEP without discussing its contents fully" (Weatherly, 2012, p. 2). If any of these occur, this becomes an illegal meeting that may lead to a violation of IDEA. Teachers may inadvertently participate in a pre-IEP meeting that potentially predetermines placement or program decisions (Walsh, 2011). This paper provides a description of what predetermination is and why it is a significant concern to school personnel and parents. In addition, suggestions for ways schools can prevent predetermination claims are provided.

Parental involvement is important in the education of children, especially children with disabilities (Hess et al., 2006; Logsdon, 2021). In fact, research has indicated parental advocacy can lead to higher levels of achievement and well-being in children as well as assist with overcoming some educational obstacles the children might have (Anderson & Minke, 2007). But what happens if parents are not included in the education of their child or if schools base curricular and placement decision concerning the child without parental input? This article will discuss one barrier to parental involvement, i.e., programmatic and placement predetermination, including why it is considered to be a violation of a free appropriate public education (FAPE) under federal law (the Individuals with Disabilities Education Act, 2004) and some ways to address this issue.

To support parental involvement in the education of children with disabilities, the Individuals with Disabilities Education Act (IDEA) mandated a continuing relationship between parents of students with special needs and schools (Murdick et al., 2014). Parents are to assume the role of advocate, and IDEA views the parental role as one of an "accountability mechanism" (Chopp, 2012; Wang et al., 2004). One method by which this accountability was to be maintained was the development of annual individualized education plans (IEPs) for eligible children by a team that included the parents in an active and meaningful role [see IDEA 2004, 20 USC §§1401, 1414(d), and *Honig v. Doe* (1988)]. According to IDEA (2004), parents must be included in all meetings where their child's IEP is developed, reviewed, or revised [20 USC §1414(d)(1)(B)(i)]. IDEA (2004) requires that schools ensure parents are provided this opportunity to participate in as an integral member of the IEP team (34 CFR §300.322).

Unfortunately, parents of students with special needs tend to face impediments when they attempt to participate as members of the IEP team (Chopp, 2012). A study by Williams (2016) found parents "expressed doubt as to whether their input into the process is given consideration, or put into practice" (p. 35) and indications reported they felt outnumbered and intimidated by the school IEP team members. These types of parental feelings may lead to problems within the IEP process.

One of the main activities that may indicate or support the presence of a problem with parental participation and result in a denial of FAPE is the presence of predetermination behaviors (Yell et al., 2013). Predetermination can be defined as an institutional IEP team (either an individual member or entire team) making decisions concerning a child's placement or program prior to the IEP meeting without parental involvement or approval. For example, "predetermination occurs when an educational agency has made its determination prior to the meeting, including when it presents one placement option at the meeting and is unwilling to consider other alternatives" [*H.B. v. Las Virgenes USD*, 2007].

Predetermination Barriers Parents Face

Predetermination behaviors can take various forms such as when the school staff completes a finalized IEP prior to the meeting with parents, when school staff indicate the IEP has already been decided before meeting with the parents, when members of the school staff or a school policy indicate there are only certain courses of action available for the child's IEP, when the school offers only a single "one size fits all" program (Davis, 2016), when unofficial school policy prohibits certain services or placements, and when the school unreasonably refuses to schedule the IEP meeting to accommodate the parents (Lemon, 2013). In addition, if the school team members ignore or prevent parental input at the meeting, this is also considered to be a procedural violation of IDEA and a denial of the parent's right to meaningfully participate in the IEP process.

Geenen et al. (2005) identified "seven main categories or types of barriers: (a) power imbalance; (b) psychological/attitudinal; (c) logistic; (d) information; (e) communication; (f) SES/contextual barriers; and (g) cultural factors or influences" (p. 8). Geenen et al.'s work expanded on previous research concerning barriers to active parental participation. Earlier research was begun in the 1980s by Turnbull and Turnbull (1986) who focused on four barriers listed as psychological, attitudinal, cultural/ideological and logistical. Research on this issue continued through the 1980s and 1990s expanding the view of parental barriers to include cultural insensitivity, ignorance, and miscommunication (Rock, 2000).

The first barrier identified by Geenen et al. (2005) was the power imbalance. This parental feeling of an imbalance of power appeared to be the most frequent and important barrier effecting parent involvement. According to Geenen et al., it was often described as omnipresent within parent interactions with school staff. They found parents perceived school-based information and decision-making was maintained within the purview of the school personnel who decided what services a student would or would not receive. This belief that school personnel were deciding the service delivery options without parental input is a serious barrier. Geenen et al.'s findings supported that of Lake and Billingsley (2000) who found the issue of power imbalance was listed by parents as "a

source of frustration when attempting to advocate for their children" (p. 245).

The second barrier Geenen et al. identified as a problem was attitudinal or psychological. Even though school meetings are intended to create an opportunity for teamwork and sharing of ideas between parents and school personnel, often parents felt the determination of their child's eligibility, service options, and placement decision was made prior to the IEP meeting and they did not have the ability to insist on changes. Dabkowski (2004) described this issue on one of team culture and posited that "team culture dictates the process by which the meeting takes place" (p. 34). Team culture was identified as the attitudes and beliefs valued by a particular team. This barrier is considered to be a significant form of predetermination.

The third barrier, logistics, often created a hardship for parent involvement. Logistics examples include scheduling issues, parental work schedules, and lack of provision of timely meeting notices. Geenen et al. (2005) found that:

> Scheduling conflicts and work obligations often make it difficult for parents to attend school meetings or conferences. Occasionally, parents indicated that could not attend a meeting because it was held during the day while they were working, or they did not receive advance notice of a conference time. More often however, parents mentioned they were too tired from the demands of their everyday schedules and they had little energy left to stay actively involved with the school. (p. 9)

A fourth barrier parents faced was information regarding their rights under IDEA. Parent, as well as school personnel, knowledge of their rights under IDEA as well as knowledge on how to advocate for their child in the special education process was noted as a detriment to their involvement and sometimes resulted in conflict (Lake & Billingsley, 2000). Geenen et al. reported parents believed their child's education was important, but they "may lack awareness regarding their parental rights and educational procedures" (p. 10).

In conjunction with the concerns noted with information, communication can be a barrier and has been found to impact parent participation. The issue with communication includes the school personnel's use of educational jargon, nonverbal communication, and style or cadence of communication, as well as issues for parents who speak a different language than the school personnel and the school personnel are not bilingual (Geenen et al., 2005). A lack of translators proficient in the language of the parents has been noted as a barrier to parent involvement (Jung, 2011). Jung noted these concerns and insisted parents from different cultural backgrounds often perceive "school professionals' clear, direct, or determined remarks" (p. 23) as distant, cold, unfeeling, and cruel.

Contextual barriers include but are not limited to many possible environmental barriers such as "poverty, violence in the home, or parental drug abuse . . . when a family is striving simply to meet their basic needs for survival, activities that are not immediately pressing, such as participating in school meetings, tend to be overlooked or neglected" (p. 10). Contextual barriers according to Dabkowski (2004) may result from the team culture which results in decisions related to the physical environment as well as how parents are treated as a result of their language, socio-economic status, educational level, etc.

Finally, culture can play a role as a barrier to parent involvement in special education determinations. Cultural issues can influence all the previous barriers because a lack of cultural understanding may create misunderstandings between school staff and families. Jung (2011) noted that parental cultural values may hamper their involvement because of traditional values related to the school-parent relationship. According to Geenen et al. (2005) parents "were treated poorly by professionals or the educational system because of their culture. While not all parents labeled these occurrences as acts of racism, they did express frustration with feeling misunderstood and unsupported because of their culture" (p. 10). The effects of this barrier may result in parents experiencing "strong feelings of isolation, powerlessness, pressure, deprivation, and alienation from the special education process" (Jung, 2011 pp. 22-23).

Federal Legislation Related to Predetermination

But what happens when this process and barriers to parental involvement results in a lack of parent/school cooperation and parental involvement and the occurrence of predetermination behaviors? Case law supports the premise that procedural violations of the IDEA process can rise to the level of denying a child's right to FAPE in certain circumstances (see *BOE of County of Cabell v. Dienelt*, 1988). For additional examples of case law addressing this issue, see *W.G. v Board of Trustees of Target Range Sch. Dist. No. 23* (1992); *Roland M. v. Concord Sch. Comm*. (1990); and *Hall v. Vance County Bd. Of Educ.* (1985). Thus, federal legislation and nationwide litigation are in place addressing issues and violations of parental participation including the presence of predetermination behaviors and indicating they constitute denials of FAPE. School district administrators and teachers; therefore, must be aware of what are and are not predetermination behaviors resulting in a violation of parental participation.

The main predetermination case is *Deal v. Hamilton* (2004) where the parents wanted the school to provide ABA (applied behavior analysis) services, but the school refused. The parents based their request on the success their child had had with privately provided ABA services. After the parental request and the school's subsequent refusal, school district personnel unilaterally decided the child's placement and program before the scheduled IEP meeting. In addition, they ignored parental input at the IEP meeting and refused to consider any suggested alternatives. These predetermination behaviors resulted in a procedural violation that infringed on the parents' right to participate meaningfully as an integral member of the IEP team and denied FAPE to the student (Martin, 2018; Yell et al., 2013). In this case the staff exhibited predetermination behaviors by arriving at the IEP team meeting with opinions and proposals without an "open mind" that would allow for parental input into the decision-making concerning their child's placement and program.

School Prevention of Predetermination

The question then arises, how do schools prevent or preclude the exhibition of predetermination behaviors? First, school district staff need to be trained to recognize their predetermined viewpoints and understand they should come to the meeting with an open mind (District Administration, n.d.). School staff often ask whether they can have an outline prepared prior to the meeting, and the answer is yes, but nothing

should be finalized. An IEP form that is prepared beforehand should be stamped "DRAFT" and if possible, provided to the parents in advance so they, too, can come to the meeting prepared (Dickerson et al., 2019; Weatherly, 2012). If school staff prepare a "draft" copy of the IEP and bring it to the IEP meeting, then all team members should be reminded that this is an example of preparation for the meeting, and that no decision on the child's placement or program has been finalized (Walsh, 2011).

Second, school staff need to consider the language they are using during the meetings (*S.S. v. Hawaii DOE*, 2014). Neutral language focused on the mutual team process of developing an IEP is essential. School staff need to be prepared and open to discussions during an IEP meeting concerning unfamiliar methods or programs that may be suggested by the parents. Language that indicates decisions related to placement or program development have been decided before the meeting must be avoided.

Third, school staff should be made aware that notes, memos, emails, and discussions regarding an IEP cannot indicate any type of tentative decision made is final. When school staff prepare internal memos and emails they must be written without any indication that predetermination of the child's placement or program has been made. Finally, school district policies need to be reviewed to ensure they are objective and do not indicate that any identified placements or program services are not approvable, thus indicating predetermination.

Engel (1991) found effective parental participation had become "the exception rather than the rule" (p. 179). Ten years later, Hornby and Lafaele (2011) continued to fine parental participation in the special education process was still a problem. Burke (2013) agreed writing that parents were still encountering "difficulties navigating the special education system" (p. 225). This is a significant problem as IDEA emphasizes and mandates parental involvement in the development of each student's plan, and the Supreme Court has ruled the IEP process is to be a "cooperative process…between parents and schools" (Chopp, 2012, p. 3). This legally mandated cooperative relationship between school districts and parents should result in equal access to educational opportunities for students with disabilities (Fish, 2008). In addition, parental involvement has been shown to be a key factor in student achievement for students with disabilities (Hess et al., 2006).

Conclusion

In conclusion, school districts must ensure predetermination behaviors during the IEP process do not occur. Any predetermination of a child's placement or services before all members of the IEP team meet, including the child's parents, is considered to be a procedural IDEA violation of the parents' opportunity to be meaningfully involved with their child's education (Fish, 2008; *Knable v. Bexley City Sch Dist*., 2001). School districts must provide staff training to ensure parental involvement as respected members of the IEP team. When this occurs IEPs can be developed meaningfully and in the best interest of the student, and predetermination behaviors can be avoided.

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Correspondence concerning this article should be addressed to Jo Nell Wood, Saint Louis University, Fitzgerald Hall, 3500 Lindell Blvd., St. Louis, MO 63103. E-mail: jo.wood@slu.edu

Project RAISE: Developing a Socially Assistive Robot to Increase the Social-Emotional Skills of Elementary Students with Autism

Eileen M. Glavey
University of South Florida

Rebecca A. Hines
University of Central Florida

Matthew S. Taylor
Salva Regina University

Abstract: Various forms of assistive technology (AT) have been developed to guide social learning for students with ASD, with many showing improvements in social-emotional and communication skills. As the number of technology-based interventions grows to include those implemented through augmented reality, virtual reality, robotic devices, and mobile applications, researchers increasingly explore the use of socially assistive robots (SARs) as an intervention to address the emotional recognition and regulation deficits characteristic of individuals with ASD. Project RAISE, Robots and Artificial Intelligence to Improve Social Skills for Elementary Students is a federally funded partnership project aimed at improving the social-emotional and communication skills of students with disabilities by creating a teaching toolkit featuring the commercially available Dash™ robot and an artificially intelligent (AI)-driven socially assistive robot, Zoobee™. The project's priority target population is students with autism and developmental disabilities with the specific goals of increasing a student's social-emotional reciprocal communication skills and their self-regulation skills as measured by time on task, and increase STEM skills. Project RAISE is a 5-year project that will culminate in an AI open-source resource for supporting students with disabilities in learning social-emotional skills, communication skills, coding, and STEM content. A description of year 1 exploration and development is shared in this article.

According to the Diagnostic and Statistical Manual (DSM-5) (APA, 2013), individuals with autism spectrum disorder (ASD) exhibit persistent deficits in social communication and social-emotional reciprocity; often having trouble with reciprocal verbal interactions in social situations and in recognizing, understanding, and responding to emotions exhibited by another person through nonverbal communication including facial expressions, vocal intonation, and gestures (Cano et al., 2021). Emotions are positive and negative affective states that unfold from contextually based evaluations that give rise to changes in experiential, behavioral, and physiological responses (Gross, 2015). Emotions serve social functions, regulating social interactions by providing information to the people around us through such things as facial expressions, voice, body posture, and word choice (Van Kleef, 2010). Emotion recognition is important in social situations because nonverbal messages expressed through emotions inform the observer about an individual's appraisal of the situation (Van Kleef, 2010) and are key to appropriate modulation and responses characteristic of successful social interactions (Berggren et al., 2018). As such, students with ASD often need intervention and supports embedded in classroom learning activities that facilitate

interactions with peers to increase their receptive and expressive social-emotional communication skills in a natural setting through authentic experiences, promoting deeper learning in context, functional use of new skills, and increasing potential for generalization (Schreibman et al., 2015). Social-emotional communication interventions for individuals with ASD have shown positive impact when mediated by technology (Carmona-Serrano, 2020).

Assistive Technology for Social-Emotional Learning

Assistive technology (AT) is defined as any device or service used to help a student with a disability meet individualized education program (IEP) goals and participate in the general education classroom to the greatest extent possible (IDEA, 2004). Assistive technology provides students with opportunities for equitable access to education, including SEL skills needed to interact with peers, teachers, and society. Different forms of assistive technology (AT) have been developed to guide social-emotional learning for students with ASD. Many technological interventions have shown improvements in social-emotional and communication skills including those implemented through augmented reality, virtual reality, robotic devices, and mobile applications (Carmona-Serrona, 2020). Few of these technology-mediated interventions have addressed the emotional regulation deficit common in individuals with ASD (Fage et al., 2019), but recent use of socially assistive robots controlled by artificial intelligence aim to do just that. The development and use of Socially Assistive Robots (SARs) to teach students with ASD has shown increased engagement, focus, and learning of social-emotional communication skills making it a promising intervention warranting further development through affective computing (Dickstein-Fischer et al., 2018).

Socially Assistive Robots

Socially assistive robots are relatively new technology for educational use (Papadopoulos et al., 2020). Papadopoulos et al. (2020) defined SARs as robots that have taken on a familiar form (e.g., pets, humans) and are programmed to interact with the user through human-like inquiries and responses including using speech, facial expressions, and emotion. Diehl and colleagues (2012) found in their review of the literature that several studies demonstrated students with ASD preferring to work with robots rather than humans and responded quicker to robotic prompts than those given by humans. The implementation of SARs in the classroom may allow students with ASD to work directly with the robot in moderating interactions and de-escalating problem behaviors, while supporting positive choices without the need for teacher or therapist intervention (Dickstein-Fisher et al., 2018). Students engaging in social activities with the SAR may even be more engaged with peers when the robot is present (Ricks & Colton, 2010). Fridin (2014) and Alemi et al. (2015) suggested in their studies that students empathized with robots and engaged in interactions with them dependent on the SARs emotional projection. This highlights the need for development of SARs with accurate emotion recognition and expression embedded through affective computer programming.

Affective computer systems are systems developed to recognize, interpret, and process human emotions (Picard, 1997). One's affective state is defined as emotions; brief, intense, reactions brought to the forefront of cognizance that have significant physiological and behavioral manifestations, preparing the body for action (D'Mello &

Graesser, 2012). Very limited research exists on the use of affective computing in socially assistive robots with children and even less focused on children with ASD (Cano et al., 2021). Future SARS developed for children with ASD must be able to understand affective states, "perceiving, interpreting, communicating, and adapting emotional states through social interactions" (Cano et al., 2021; Liu et al., 2008). The use of SARS with affective computer systems built in would allow the robot to receive and respond to the physiological and behavioral signals of children as they interact in addition to verbal interactions (Cano et al., 2021) which is something current robot-assisted interventions to assist children with ASD often lack (Liu et al, 2008).

Multimodal Data Collection

Affective states are complex and expressed through various channels, therefore accurately capturing human emotions requires collecting and combing data from various channels at the same time to increase accuracy and reliability of the identification of affective states (Noroozi et al., 2020; Poria et al., 2017). Multimodality is an approach that incorporates speech as an important channel of communication, but also understands the importance of "communication and representation as more than language and attends systematically to the social interpretation of a range of forms making meaning" (Jewitt, 2013, p. 250). Multimodal data collection uses multiple technological tools for mapping and analyzing the multi-faceted features of communication including speech, facial expression, and gestures. Accurate affective computing relies heavily on the use of multimodal data approaches to affect recognition (Jewitt, 2013; Noroozi et al., 2020).

Project Description

Project RAISE, *Robots and Artificial Intelligence to Improve Social Skills for Elementary Students*, aims to improve the social-emotional and communication skills of students with autism and other developmental disabilities by creating a teaching toolkit featuring the commercially available Dash™ robot (see Figure 1) and an AI-driven socially assistive robot, Zoobee™ (see Figure 2) currently in development through this project. The toolkit will provide students with an experience that includes learning basic coding while also practicing real-world skills like problem solving, collaboration, cooperation, and strategic thinking.

Figure 1. *Dash™ robot*

Figure 2. *Socially Assistive Robot, Zoobee™*

Zoobee™ provides support for the student through three phases of the project. Funded by a federal Stepping Up grant, Project RAISE is a 5-year project that will culminate in an AI open-source resource for supporting students with disabilities in learning social-emotional communication skills, coding, and STEM content. This paper discusses specific findings from the first development year of the project. During year 1, the first of two project development years, no formal research study was conducted. Exploration and development of technology tools, procedures, student interest, and setting were the focus of year 1. Data was collected throughout informal case studies to determine the feasibility of the project and its components, to finalize tools, develop AI and procedures, and pilot the project.

Project Implementation

Project RAISE is a three-phase intervention using AI to support students with ASD, specifically with goals of increasing emotion recognition and response, reciprocity in conversation, and self-regulation. During the exploration and development stage in year one, researchers focused on the physical design of Zoobee, language development to program the AI of the SAR, and trials of various technology used for data collection. Five informal trials were conducted, each with a different participant from an inclusive high-need elementary school identified on individualized education programs (IEPs) as having autism or another developmental disability and deficits in social-emotional and communication skills. All students were also screened using the universal screener, *Social, Academic, Emotional, and Behavior Risk Screener (SAEBRS).*

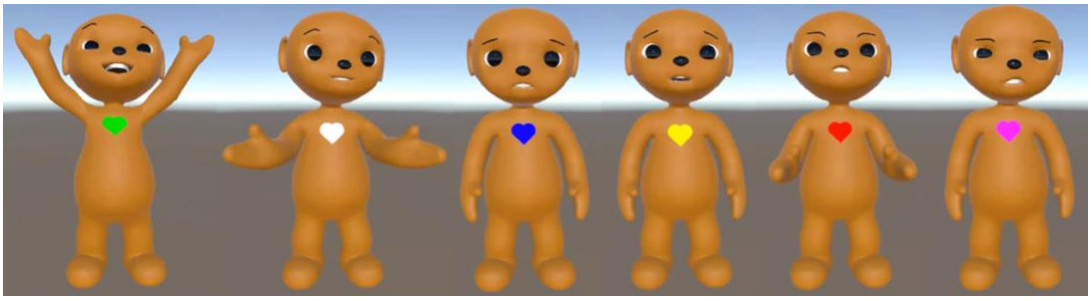
After acquiring consent for each identified student to participate in exploration and development session trials, students participated in a series of 10 sessions over three phases of the project:

Phase 1: Students visit Zoobee's World, a pre-determined space on the school campus for the project activities to take place. During each ten-minute session students were taught how to code Dash to move in a square by Zoobee. While being escorted to the coding session by a paraprofessional trained in the initial procedures, students were presented with a video social story on the iPad to explain what would happen during the session. The video script included the following excerpt to explicitly teach emotion recognition before the session began and Zoobee's heart color and expressions on the screen matched the script (see Figure 3):

> *While we are coding together you will see my heart changes colors.*
> *The color of my heart matches how I am feeling so it can help you understand how I feel.*
> *When my heart is green, I feel happy!*
> *When my heart is white, I am feeling calm. Everything is ok.*
> *If you see my heart is blue, you will know I feel kind of sad or disappointed!*
> *If I am nervous or worried my heart turns yellow.*
> *If I am feeling frustrated and getting a little angry, my heart turns red.*
> *A purple heart means I am feeling a little yucky or grossed out.*

A key feature of Zoobee is his heart changing color based on his feelings during interactions with the participant. This is designed to prompt students to notice the change in Zoobee and begin to ask questions or show concern for Zoobee. During year 1, specific data was not collected on whether or not a student understood the feelings that Zoobee demonstrated with the changing heart color, but informal analysis of transcripts reveals students referred to

Figure 3. *Video Social Story Images*



Zoobee's heart color and feelings accurately. The changing heart color feature, as well as the interaction with Zoobee during this development year, includes a "human in the loop" who controls Zoobee's voice, heart color, and body movements while teaching the student to write a basic code for Dash. The final iteration of the project anticipated in year 3 will be AI-driven with no "human in the loop."

Because the project started during the Covid Pandemic when school shutdowns ended and because space on the first site was limited, Zoobee's World was set up inside a 6'x6' pop-up tent (see Figure 4). Using the tent system allowed participants to remove their face mask while providing a barrier for researchers to maintain social distancing. Once in the tent, Zoobee™ taught students to code Dash the robot to drive in a square over a 15-minute session.

Figure 4. *Phase 1 Image of Zoobee's World*

Student participants completed a post-activity survey (see Figure 5) to help the project team determine the social validity of the activity. Information from student perceptions were used to help shape the planned interactions for future sessions.

Figure 5. *Post-Session Survey for Social Validity*

Phase 2: Once the student participant demonstrated mastery of programming Zoobee to drive in a square, he/she shared these new skills with a neurotypical peer (see Figure 6). The participant and peer were escorted to a designated setting by a

paraprofessional trained in the procedures for the peer-to-peer coding session. During the 15-minute session, the student participant taught their peer the steps to coding Zoobee to drive in a square while receiving prompting and support from Zoobee as needed for coding, social-emotional, behavioral, and communication skills.

Figure 6. *Phase 2 Image of Peer-to-Peer Teaching*

Phase 3: In the final phase, Zoobee™ provided SEL support for the student during 15-minutes of the regularly scheduled math class (see Figure 7). While the student participated in regular classroom activities, Zoobee was present on a computer on the student's desk. Because this phase is in the classroom, much of year 1 focused on identifying procedures and equipment to minimize disruption to the classroom environment. Interaction from Zoobee was limited to praise statements such as "I like the way you are working" to encourage and maintain appropriate behavior with minimal support to maintain focus on the teacher and the lesson. Phase 3 also focused on identifying strategies for generalizing social-emotional communication skills and self-regulation skills exhibited during phase one and phase two. Researchers analyzed the sessions during this phase to determine intervals of praise and key words and statements that can later be programmed into the AI.

Figure 7. *Phase 3 Zoobee in Class*

Year 1 Findings

In the first year of the project, the focus was on exploration and development of the AI language script; trial of various technology tools for physiological channels of multi-modal data collection to help drive the AI while the student participant interacts with Zoobee; protocols and procedures; and training for teachers, paraprofessionals, and technology assistants.

Creating AI Language

Five students participated in a total of 50 sessions during the initial exploration and development stages. A script was written and used for initial language to guide interactions between the SAR, Zoobee and the student participant as they learned the basic coding skills as seen in the Figure 8 excerpt. A professionally trained human interactor remotely controlled the language, behaviors, gestures, and expressions of Zoobee. As the natural language that occurs in sessions is collected and analyzed throughout two development years, the AI will be programmed, and the human interactor will be removed from the programming loop.

Figure 8. *Excerpt from Initial Coding Session Script*

Direction	Completed Correctly YES	NO
1. Zoobee greets student		
a. Hi [student name], I'm excited to work with you today!		
2. Zoobee introduces Dash		
a. We are going to work with Dash today!		
3. Student demonstrates moving Dash in straight line		
a. Can you show me a straight line with your finger? *If completed, "Great job!"* *If not completed, repeat prompt*		
4. Turn Dash on		
a. Turn Dash on. *iPad should be on blank Blockly screen*		
5. Tell Dash to move in a straight line		
a. Let's tell Dash to move in a straight line. b. Can you find the 'forward' block? c. Connect 'forward' to start. *If student can't find the block or says they don't know, Zoobee directs,* *"Press 'drive',* *Press 'forward'.* *Drag 'forward' connect it to 'start'."*		
d. Press play *When completed, praise student:* *"Nice job! You made Dash move straight!"* *If student needs help finding 'play', Zoobee says, "Press the green button with the triangle in it on the bottom."* *When complete, praise student.*		

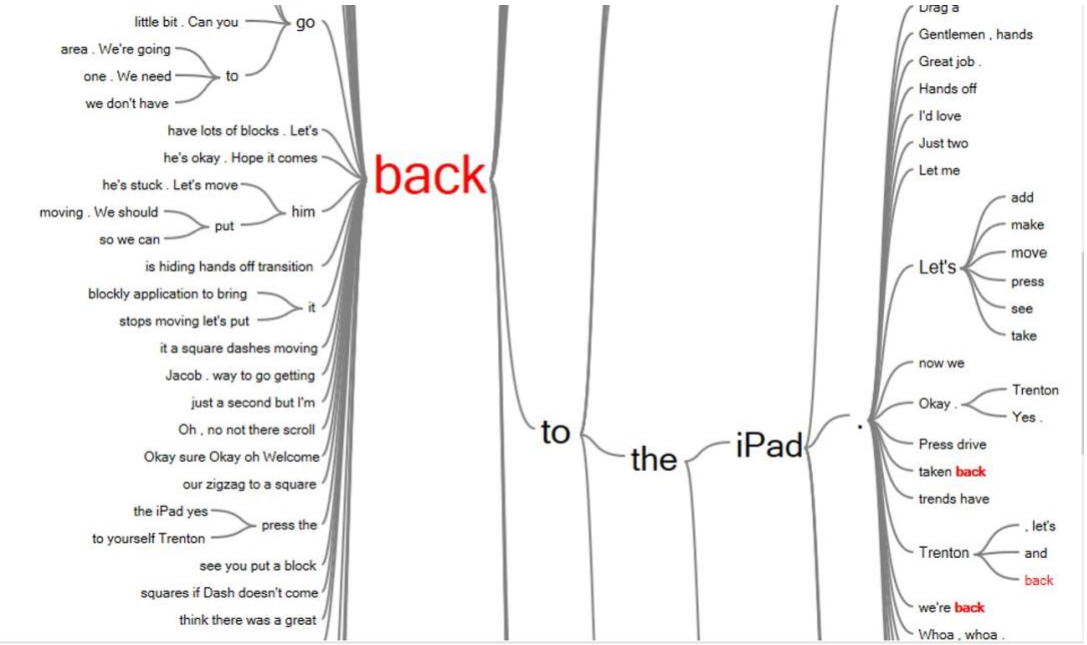
To identify the language to be programmed into the AI, all sessions were recorded and transcribed through a free, commercially available software, Otter.ai. All transcribed sessions were imported into NVivo software for coding and analysis. Initial analysis was conducted for all phase one sessions to begin identifying key words and phrases spoken by Zoobee that were not already part of the coding script. The word frequency query function of NVivo was used to list the most frequently occurring words from Zoobee phase 1 transcripts (see Table 1). Based on the results of the word frequency query, text search queries were run to gain a greater understanding of the context of how words were used and begin identifying initial phrases for AI scripting based on successful patterns observed in natural occurring language for Zoobee.

Using key words and phrases revealed in the transcripts, language to guide the fully AI version emerged. For example, the word "Press" appeared 206 times, including "Press drive," "Press play," and other specific instructions. By noting student reactions and ability to follow
the instructions using the simple phrases, these became part of the planned AI script. An example of findings of a text search query for the word "back" shows how the key phrase "back to the iPad" was revealed through visual inspection of a word tree (see Figure 9).

Table 1. *Word Frequency Query Results for Zoobee Phase 1 Sessions*

Word	Count
dash	212
press	206
square	165
block	155
make	147
let	142
button	140
okay	124
drive	100
see	100
yeah	94
look	87
move	81
back	76
try	75

Figure 9. *Text Search Query Results for the Word "back"*



Other findings from the first year of development included technical barriers to physiological multimodal data collection and the coding system Blockly. Multiple trials to find the best technology device for monitoring students physiological state including heart rate monitors, eye tracking devices, facial expression software, and wristbands to track electrodermal activity and stress levels were conducted during year one.

Due to student movement, it was determined that current facial expression and eye tracking software were not viable measures as they required students' faces to remain always looking in front of the camera. To date, the research team continues to explore commercially available devices and applications needed to inform the AI. Most attempts have resulted in failure to be able to access the back-end data needed to program the AI due to encryption, but negotiations are ongoing with several commercial device developers to access this data. The researchers are currently developing a coding software specifically for this project that will eliminate the need for a commercially available software.

While the tent initially used for Zoobee's world was successful in removing distractions and met the need to create a designated space on a small school campus in which to conduct the project, the researchers determined that a larger area was needed for the older elementary students. Ultimately the team moved activities in Step 1 to an open space in a classroom. Overall, limitations to the control researchers had in terms of factors beyond the scope of the study existing in a natural setting revealed potential threats to internal and external validity that are being addressed in current study protocol revisions.

Project Outcomes for Students

Data was collected throughout year one to inform the research team as it developed data collection methods, validated procedures, and piloted various equipment. Specific desired outcomes for students in the project include:

1. Improved social-emotional reciprocal communication skills
2. Enhanced self-regulation skills & focus
3. Understanding of basic coding

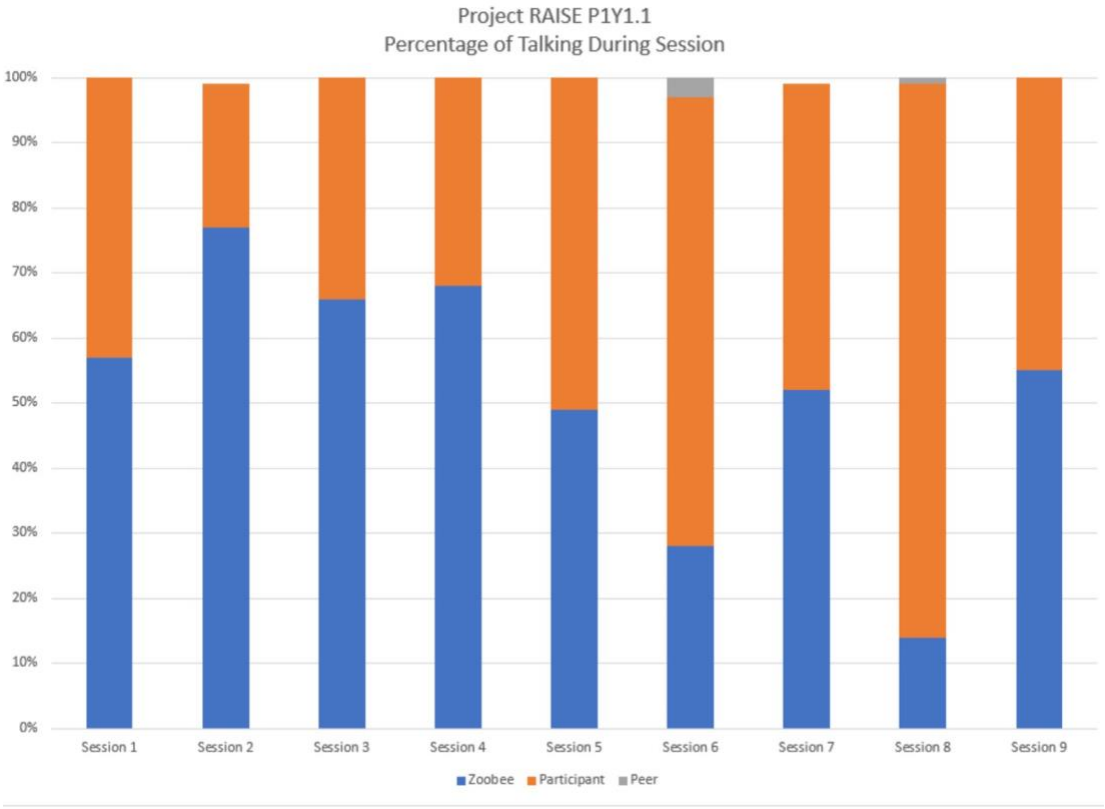
All recorded sessions were coded in specific areas related to the project goals of increasing reciprocal interactions and improving self-regulation. Self-regulation was formally measured through coding time on task (ToT) by the participant throughout the sessions. In years 2 & 3, baseline and post-intervention data will determine whether the three phases of the intervention led to increased ToT when the student returned to classroom activities. Initial findings from the development stage revealed that students were engaged with Zoobee during all phases of the study, responded to Zoobee's questions, asked Zoobee questions, and noticed Zoobee's heart.

An initial examination of verbal engagement indicates that participants demonstrated reciprocity in conversations with Zoobee. Although there was variation among participants, there was a steady trend in shared speaking time. There is also anecdotal evidence of students using self-talk language, and SEL skill, as they figure out the coding procedures. Participant talk increased as comfort level with content and Zoobee increased and coding tasks became more complex (see Figure 10).

Conclusion

Attention to using AI and SARs to support the communication and social skill development of students with ASD continues to show promise. Project RAISE, a federally funded research project, is building on these early findings of success to develop an open-source AI tool for supporting students with ASD. The 5 Year Project includes two development/exploration years, two years during which the toolkit will go through pilot testing, and the fifth year of the project will be full implementation, contingent upon success during pilot-testing. Currently the project is in its second year of development. At the conclusion of year one, explorations

Figure 10. *Participant 1 Percentage of Talking During Sessions*



continued to focus on identifying tools feasible for ongoing multimodal data collection during sessions with Zoobee, as well as language scripting needs for an AI robot developed for students with ASD. Zoobee's appearance and sound is in its second iteration, with a second version currently being designed based on student feedback.

Using transcripts from actual session recordings allowed researchers to determine phrases commonly. used that elicited the desired response by student participants. Consistent with what Diehl and colleagues (2012) found in their review of the literature, student participants in the initial year of Project RAISE responded positively to the robot and remained on-task throughout coding sessions as measured by time sample observations of time on task. The initial findings also support Fridin (2014) and Alemi et al. (2015) findings that students were aware of the robot's emotional projection and engaged in interactions discussing emotions. One student even "tested" Zoobee by making a mean statement and said he wanted to see if his heart changed to blue when he was sad. The student quickly apologized and said he liked Zoobee when he saw Zoobee's sad face and blue heart, but said he "just wanted see if his heart color would change." As the project continues, formal research into the transfer of SEL and communication skills into the math classroom is being examined. The future goal is to ensure that Zoobee is fully developed and fully driven by AI, no longer requiring a "human in the loop". Researchers continue to design and research the system that, through

multimodal data collection, recognizes, interprets, and processes emotions of the student during their sessions with Zoobee so that this information will lead to a program that supports students in generalizing and maintaining those skills in the classroom.

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University Students' Perceptions of Individuals with Autism Spectrum Disorder

Leslie Meskin
Florida Gulf Coast University

Noelle Balsamo
Florida Gulf Coast University

Annemarie Connor
Florida Gulf Coast University

Adrienne Yaryan
Florida Gulf Coast University

Kevin Loch
Florida Gulf Coast University

Abstract: The increased prevalence of students with autism spectrum disorder (ASD) in higher education provides a unique opportunity to shape a more inclusive social network on college campuses, which may promote improved educational and post-secondary outcomes. This study examined the attitudes of neurotypical students towards individuals with ASD. A total of 139 students, both undergraduate and graduate, across three disciplines completed measures of ASD knowledge and ASD stigma. Results suggested that graduate students demonstrated significantly higher levels of ASD knowledge than undergraduates, yet levels of stigma were similar across groups. Moreover, knowledge was identified as a significant predictor of stigma, but only explained a small percentage of the variance in our sample. Limitations and implications for research and practice are discussed.

Increases in the identification and early detection of individuals with autism spectrum disorder (ASD) have brought the prevalence of the disorder to the attention of contemporary society. Current estimates suggest that as many as 1 out of 44 children have a diagnosis of ASD (Maenner et al., 2021). Federal legislation, specifically the Individuals with Disabilities Education Act (IDEA, 2004), requires the inclusion of individuals with ASD in free public general education and school-based programming in the least restrictive environment. This legislation has increased participation and interaction of individuals with ASD in public education alongside their neurotypical peers beginning in early childhood (Harrower & Dunlap, 2001). Participation in non-restricted education likely extends to the university level given that the intellectual capacity of approximately 65 % of children with ASD is in the average or above average range (Maenner et al., 2021).

In fact, researchers suggest individuals with ASD are attending university in increasing numbers, with prevalence estimates of students with ASD enrolled in college ranging from 0.7 % to 1.9 % (White et al., 2011). These estimates suggest that individuals with ASD account for between 1 in 130 and 1 in 53 of all college students (White et al., 2011). Most (81%) college-enrolled students with ASD attend two-year colleges exclusively or as a path to four-year institutions (Wei et al., 2014). Poor retention rates are common among individuals with ASD who embark on college studies (Gillespie-Lynch et al., 2015; Matthews et al., 2015). Given the diminishing postsecondary outcomes that have resulted for students with ASD (e.g., lack of employment and/or social networking), it is

important to examine the barriers to successful participation and completion in higher education settings (Petcu et al., 2021).

Barriers to College Success

Individuals with ASD struggle with social communication and organizational skills rendering frequent social situations, multiple daily transitions, and independent activities while on campus difficult (Gelbar et al., 2014; White et al., 2011). These challenges contribute to poor retention levels, comorbid mental health concerns and social issues throughout their collegiate experience, all of which pose significant barriers to participation and successful completion (Gelbar et al., 2014; Gillespie-Lynch et al., 2015; Kuder et al., 2022; Matthews et al., 2015; White et al., 2011).

Retention in the university setting is a significant problem among students with ASD. While estimates suggest that more than 40% of transition-age adults with ASD will enroll in an educational setting after high school, these students are less likely to complete their degree (33.8%) compared to their neurotypical counterparts (52.4%; Newman et al., 2011). While it is unclear what causes premature termination from university, research suggests that nonacademic challenges may have a larger impact than those related to workload (Jackson et al., 2018). In a series of semi-structured interviews of students with ASD in higher education, Van Hees and colleagues (2015) described the following challenges faced by students: difficulties coping with novel situations and information, concerns about disclosing diagnosis, and struggles with mental health issues. Similarly, White and colleagues (2019) conducted focus groups with students with ASD and relevant stakeholders and identified interpersonal competence as the biggest need during the college years.

Individuals with ASD are also likely to experience comorbid disorders while at college. Gelbar and colleagues (2014) reviewed the literature around the experiences and supports of individuals with ASD while at college and found that substantial rates of anxiety, loneliness and depression were frequently reported (Gelbar et al., 2014; White et al., 2011). Similarly, Kuder and colleagues (2021) reviewed literature around the mental health of individuals with ASD at college and found frequent reports of anxiety, loneliness, and depression. Collectively, both reviews suggest that mental health issues are significant among individuals on the spectrum while at college.

Perceptions of ASD Peers

The increased enrollment of individuals with ASD in university settings as well as the documented poor retention rates has encouraged exploration of the challenges they face on their collegiate journey and resulted in emerging but scant empirical support for how to best address these issues. Individuals with ASD can be negatively impacted by peers' lack of knowledge, the presence of stigma, and dearth of interaction with their neurotypical peers on college campuses (Gillespie-Lynch et al., 2015).

ASD Knowledge. For the purposes of this study, knowledge and awareness are operationally defined as the same construct, as the literature uses these terms interchangeably. Several studies have examined students' levels of knowledge regarding their peers with ASD. These studies suggest that direct contact with someone with ASD produces greater levels of knowledge around the diagnoses. However, the literature is less consistent in detailing how knowledge influences attitudes towards individuals on the spectrum. For example, the initial peer-reviewed article on

the topic was conducted by Nevill and White (2011) and examined the openness of college students towards their peers with ASD. Utilizing a vignette about a peer who exhibited behaviors that are typically found in individuals with ASD, Nevill and White (2011) found a significant difference in openness between individuals with and without a first-degree relative with ASD, suggesting that exposure to an individual with ASD may positively impact levels of openness (Nevill & White, 2011).

Similarly, Gardiner and Iarocci (2014) and Tipton and Blacher (2014) also found that familiarity with ASD increased openness or positive attitudes towards peers with ASD. Gardiner and Iarocci (2014) like Nevill & White (2011), utilized vignettes to examine factors that influence college students' acceptance of and intention to volunteer with individuals with ASD and discovered that both the amount of contact and the quality of the contact with peers with ASD, as portrayed via vignettes, were predictors of openness. However, for students with direct experience with individuals with ASD, only the quality of the contact remained significant. Tipton and Blacher (2014) conducted a large study on a campus community of 1057 students, faculty and staff, and explored levels of knowledge around the characteristics and causes of ASD. They found that 76% of participants had more correct answers about ASD knowledge than neutral answers or incorrect answers; however, 58.1 % of respondents also thought that vaccines are a causal factor in the disorder. Metanalyses of both case-control and cohort studies have confirmed that there is no association between vaccines and ASD (Taylor et al., 2014). Additionally, those who personally knew someone with ASD had significantly more correct responses (Tipton & Blacher, 2014).

In another study, Matthews et al. (2015) compared students' affective, cognitive and behavioral attitudes towards a vignette character with ASD characteristics. Students were randomly assigned to one of three labeling conditions for the character: a college student with ASD, a typical college student, or no label. Students who were given the ASD label for the vignette character reported more positive behavioral and cognitive, but not affective, attitudes than students whose character had no label. Additionally, male students and students who reported having fewer ASD characteristics had more positive attitudes across study conditions. Overall, these results suggest that knowledge of the ASD diagnosis may improve attitudes of college students towards their peers with ASD.

Other studies had different findings around the influence of knowledge on attitudes towards individuals with ASD. White et al. (2019) examined college students' knowledge and attitudes towards students with ASD across two cohorts five years apart. As expected, the later cohort demonstrated greater levels of knowledge and more positive attitudes towards students with ASD. However, knowledge did not predict attitudes, and students who were knowledgeable about ASD still reported negative attitudes towards interacting with students with ASD in the classroom and on campus (White et al., 2019).

Stigma. Stigma has been defined as "negative attitudes toward attributes that do not match culturally established norms" (p. 89) and has been identified as a barrier to advocacy and social inclusion for individuals with ASD and their families (Gillespie-Lynch et al., 2015). Stigma can be assessed utilizing a social distance scale where participants are surveyed around how willing they are to engage in varying levels of intimacy with a

given group (Bogardus, 1933; Wark & Galliher, 2007). The concept of social distance examines the nature of personal relationships by describing the extent of social interactions one individual participates in with another (Park, 1923; Wark & Galliher, 2007). Several studies have utilized social distance as a measure of willingness to interact with or stigma towards individuals with ASD (See Gillepsie-Lynch et al., 2015 & Obeid et al., 2015). In particular, studies have examined how levels of knowledge around ASD have impacted levels of stigma.

For example, Gillepsie-Lynch et al. (2015) piloted an online training program to improve knowledge and decrease stigma among 365 students. The online training program consisted of a 75-slide PowerPoint covering diagnosis, signs, causes, myths, challenges, and opportunities with individuals with ASD. Utilizing a pretest-posttest design, they found that women held lower levels of stigma toward ASD than men and that the majority of participants had relatively high levels of baseline knowledge around ASD. However, participants also had misconceptions around ASD and difficulty distinguishing ASD from other developmental disorders. Despite this, participation in the training was associated with increased knowledge about ASD and lower levels of stigma (Gillespie-Lynch et al., 2015). In a second study by these authors, they utilized a quasi-experimental design to assess the cross-cultural application of the training in Lebanon, and similarly found increases in knowledge and decreases in stigma (Obeid et al., 2015). These studies suggest that an online program can potentially increase knowledge and willingness to interact and decrease stigma for students around their peers with ASD.

Most recently, a study by Kitchin and Karlin (2021) explored the relationship between stigma and knowledge about ASD in 144 undergraduates. Knowledge was measured in the areas of diagnosis and symptoms, etiology and treatment. Results suggest that knowledge of ASD treatment and etiology predicted stigma; however, knowledge of diagnosis and symptoms did not. No significant difference was found between male and female students. Collectively, these studies suggest that direct familiarity with an individual with ASD may increase knowledge; however, this knowledge does not necessarily impact attitudes.

Collectively, these studies suggest neurotypical college students may have adequate knowledge around their peers with ASD; however, this knowledge may not be adequate to impact attitudes. Other studies suggest that increases in knowledge may encourage interaction and/or reduce stigma (Gillespie-Lynch et al., 2015, White et al., 2019). In turn, more robust understanding of the attitudes of neurotypical peers may bolster the achievement, experience, and retention of individuals with ASD on campus.

Purpose of the Current Study

The growing number of students with ASD in higher education (Ashbaugh et al., 2017) provides a unique but time-limited opportunity to shape a more inclusive social network on college campuses, which may promote improved educational and post-secondary outcomes for both neurotypical and neurodiverse students. This is especially true for programs preparing students to work for and with the ASD community in educational and human service settings (Beverly & Wooster, 2018). However, the extent to which college students accept and/or interact with students with ASD during their professional preparation programs has yet to be sufficiently explored or broadly cultivated (White et al., 2019).

The purpose of the current study was to add to the growing research base around the attitudes of neurotypical peers towards individuals with ASD on the university campus. Understanding the perceptions of neurotypical college students will allow for the development of programs that increase knowledge and address stigma and can potentially facilitate the successful integration of individuals with ASD on college campuses.

Recognizing accurate knowledge about ASD is necessary yet insufficient in decreasing disability-related stigma among college students (Gillespie-Lynch et al., 2015), and knowing that quality interaction has been found to decrease stigma in related studies (Chun et al., 2020; McManus et al., 2011), this study explored the attitudes of a cohort of university students using a survey instrument designed to describe ASD-related knowledge, stigma, and interactions among a cohort of college students enrolled in the colleges of Health & Human Services, and Education. The research questions in the current study are: (1) What is neurotypical college students' level of knowledge of individuals with ASD? (2) What are the number and type of relationships neurotypical college students have with individuals with ASD? (3) To what extent, if any, does level of knowledge and/or relationship predict perceptions of stigma around individuals with ASD?

Method

This study utilized a cross sectional survey design to capture neurotypical students' level of knowledge and interactions with individuals with ASD. Additionally, the study examined if knowledge and interaction predicted levels of stigma towards individuals with ASD. Procedures, participants, measures and analysis are detailed below.

Procedure

Following Institutional Review Board approval, students enrolled in courses with investigators LM, NB, and AC were invited to participate in an online survey developed in Qualtrics, and a link was posted on the university's learning management system in the fall of 2021. The purpose of the study and the online informed consent process were described to students, who were informed that participation in the study was voluntary, they could earn two bonus points for their participation, and no penalty would be imposed for choosing not to participate. An alternate assignment to earn bonus points without study participation was also given. After informed consent was endorsed, participants were asked to complete a demographic questionnaire and a series of questions related to ASD awareness, stigma, and number/type or relationships with individuals with ASD. Average completion time was approximately 10 minutes.

Participants

A total of 151 students initiated the online survey, and 12 submitted data that were not usable due to non-completion. The usable sample for the study was 139. Participants were undergraduate and graduate students from a comprehensive regional university in southwest Florida. Student respondents were from two colleges, the College of Health and Human Services and the College of Education, and three academic areas: social work, occupational therapy, and education.

Table 1 characterizes participants, who were predominantly female (87.77%), White (64.00%), and enrolled in a graduate program (59.71%). Most participants were enrolled in social work (30.90%) or occupational therapy (25.90%) master's programs.

Table 1. *Participant Characteristics (N=139)*

Characteristics	*n* (%)	*Mean (SD)*	Range
Age		25.84 (7.32)	19-54
Gender			
Female	122 (87.77%)		
Male	13 (9.35%)		
Non-binary	1 (0.72%)		
Prefer not to say	3 (2.2%)		
Race and Ethnicity			
White Caucasian	89 (64.0%)		
Hispanic and Latinx	21 (15.1%)		
Black or African American	13 (9.4%)		
Asian	5 (3.6%)		
Two or more	9 (7.2%)		
Native Hawaiian or Pacific Islander	1 (0.72%)		
Prefer not to say	1 (0.72%)		
Academic Program			
Master's Social Work	43 (30.9%)		
Master's Occupational Therapy	36 (25.9%)		
Bachelor's Social Work	29 (20.9%)		
Bachelor's Education	24 (17.3%)		
Masters/Doctoral Education	4 (2.9%)		
Other Undergraduate	3 (2.2%)		

Measures

Measures used in the current study included a demographic survey and two evidenced-based scales (detailed below) to ascertain knowledge of ASD. This instrumentation was combined into one Qualtrics survey consisting of 31 questions, with a maximum completion time of 10 minutes. The Social Distance Scale (Bogardus, 1933) was adapted as a measure of ASD stigma. The Autism Awareness Scale, as adapted by Gillespie-Lynch and colleagues (2015), was used to measure the level of ASD knowledge. Finally, previous work was adapted to capture the number and type of relationships that neurotypical peers had with individuals with ASD (Gillespie-Lynch et al., 2015).

Demographic Survey Questions. The demographic survey questions were adapted from those used by Gillespie-Lynch and colleagues (2015) and queried about participants' gender, age, highest level of education, ethnicity, major, GPA and individual experience with ASD. Individual experience with ASD was evaluated with the following question, "Please select as many as the following types of relationships as you have had with people with ASD: yourself, your child, your parents, your sibling, your spouse, your extended family member, your friend, your coworker, your student, your fellow student, your acquaintance and other."

Measures of ASD Stigma and ASD Knowledge. Researchers used an adapted version of The Social Distance Scale (SDS; Bogardus, 1933) to capture stigma toward ASD. Social distance can be conceptualized as a measure of willingness for intimacy towards a particular group (Wark & Galliher, 2007). The first SDS was administered by Bogardus in 1926 and focused on examining attitudes around race. Since then, it has been

translated into a multitude of languages and utilized to measure perceptions around a diverse range of groups (Wark & Galliher, 2007). In this study, seven questions were adapted from the original 60-question scale to gain a more comprehensive picture of students' attitudes towards individuals with ASD. Specifically, questions that asked about attitudes towards individuals with ASD as colleagues and supervisors, as well as willingness to serve individuals with ASD as clients or students, were chosen. Responses were scored on a scale from 1 (*least stigma*) to 4 (*most stigma*). Scores were then totaled to create a sum between 6 to 24. Social distance scales have good internal consistency and construct validity, with the internal consistency recently reported as α=.87 by Gillepsie-Lynch et al., 2015 and as α=.87 in the current study's sample.

The Autism Awareness Scale (AAS) was originally published by Stone (1987) with adaptations by Heidgerken et al., 2005 and Gillespie-Lynch et al., 2015. The 13 items are scored on a 5-point scale according to level of agreement (from -2 to 2) and then summed for a total score of ASD knowledge between -26 to 26. Higher scores suggest higher levels of knowledge. Six items on the scale are reverse scored. The internal consistency of the version adapted by Gillepsie-Lynch and colleagues (2015) was low, α=.56, but was acceptable in the current study, α= .73.

Analyses

Descriptive and inferential statistics were run using IBM SPSS v26.0. Data were tested for parametric test assumptions (normality, linearity, homoscedasticity, independence) before analysis. Alpha was set at the .05 level. Independent sample *t*-tests were used to compare means between undergraduate and graduate students on measures of ASD awareness (AAS) and stigma (adapted SDS). Due to a significant Levene's test on both the AAS and SDS outcomes, equality of variances could not be assumed, and adjusted degrees of freedom are reflected in the *t*-test equations. Correlation analyses were run to examine the relationship between potential predictors (frequency count of relationships and AAS sum score) and the dependent variable of interest, SDS sum score. Finally, a simple regression analysis was run using AAS as the only predictor with a statistically significant correlation to the outcome (SDS), the model was assessed for bias using Casewise Diagnostics and plots of residuals.

Results

The survey response rate was 80.74 %, and the completion rate was 92.51%, with 139 usable responses and seven surveys started but without completion of any one of the embedded measures. The survey results are detailed in Tables 2-6.

Descriptive Statistics and Correlations

Means, standard deviations, and ranges for undergraduate and graduate students' scores on measures of bias (SDS) and knowledge (AAS) are detailed in Table 2. On average, the level of bias, as indicated by a grand mean SDS score of 12.07/24, among graduate and undergraduate students was moderate. On average, knowledge of the nature and characteristics of the diagnosis and manifestation of ASD, as indicated by a grand mean AAS score of 13.88/26 among graduate and undergraduate students, was moderately high across questions about diagnostic best practices, gender disparities in diagnosis, behavioral manifestations, and the diversity of abilities and outcomes across the spectrum.

Table 3 details the percentage of accurate responses on the AAS by question. Results indicate that, on average, 76% of all responses were accurate. The lowest accuracy (48%) was seen in a question related to earliest age of diagnosis. The

Table 2. *Potential Student Bias (SDS) toward and Knowledge (AAS) of Autistic Peer*

Outcome	Group	*N*	*M (SD)*	Range
SDS	Undergraduate	56	12.50 (4.73)	9.00 to 34.00
	Graduate	83	11.64 (2.57)	9.00 to 20.00
AAS	Undergraduate	55	12.24 (5.81)	0 to 24.00
	Graduate	83	15.52 (4.40)	-3.00 to 26.00

highest accuracy (96% and 94%, respectively) related to the potential of individuals with ASD to go to college and marry, and the relatively low prevalence of co-occurring intellectual disability in the population.

Table 4 details frequency of types of relationships with peers with ASD, with acquaintance, extended family member, and friend listed as the top three categories for both undergraduate and graduate students. Table 5 details the exploratory correlations run to inform the regression analysis, as well as means and standard deviations for SDS and AAS outcomes for the entire sample. The only statistically significant, $p < 0.01$, correlation with the outcome of interest (SDS) was AAS, which indicated a negative and moderate, $r = -0.357$, correlation.

Comparison of Means

When comparing undergraduate and graduate students' self-reported knowledge (AAS) about peers with ASD, there was a statistically significant difference, –3.28, t (93.91) = -3.57, $p = .001$ [CI 95% -5.11, -1.46], with graduate students reporting greater knowledge than undergraduates. When comparing undergraduate and graduate students' self-reported stigma

(SDS) related to peers with ASD, graduate students reported higher knowledge around stigma; however, this difference, 0.86, was not statistically significant $t(77) = 1.24$, $p =$ 217 [CI 95% -0.517, 2.24].

Regression Analysis

Results of a linear model of ASD awareness (knowledge) as a predictor of stigma indicated an $R^2 = 0.128$, suggesting that 12.8% of the variance was explained by the predictor. Table 6 details the betas, standard error, p-value and confidence intervals for the regression.

Summary of Results

Key findings in the current study included a statistically significant difference in levels of ASD knowledge, with graduate students showing higher knowledge when compared to undergraduate students. Overall, ASD knowledge was moderately high across our sample, and negatively and moderately correlated with stigma. Further, ASD knowledge was a significant predictor of stigma yet accounted for a small percentage of the variance in our sample. There was not a statistically significant difference when comparing stigma among graduate and undergraduate students. However, it is noteworthy that perceived stigma was in the moderate range across our sample.

Discussion

Earlier identification and stricter federal legislation over the past few decades, have resulted in an increased number of students with ASD participating in the general education curriculum and inclusive settings

Table 3. *Percentage of Accurate Responses on the Autism Awareness Scale (AAS)*

Question	%
1. Autism is more frequently diagnosed in males than females.	64
2. Children with autism do not show attachments, even to parents/caregivers.	74
3. People with autism are deliberately uncooperative.	90
4. Children with autism can grow up to go to college and marry.	96
5. There is one intervention that works for all people with autism.	85
6. Autism can be diagnosed as early as 15 months of age.	48
7. With the proper treatment, most children diagnosed with autism eventually outgrow the disorder	74
8. People with autism show affection.	80
9. Most people with autism have low intelligence.	94
10. Children with autism grow up to be adults with autism.	66
11. People with autism tend to be violent.	68
12. People with autism are generally disinterested in making friends.	79
13. People with autism have empathy.	76

Table 4. *Student Relationships with Autistic Peers*

Relationship	Undergraduate	Graduate
	Frequency (%)	Frequency (%)
Acquaintance	24(42.9)	33(39.8)
Extended Family Member	20 (35.7)	25 (30.1)
Friend	20 (35.7)	21 (24.1)
Fellow Student	19 (33.9)	18(21.7)
Coworker	8 (14.3)	5 (6.0)
Sibling	5 (8.9)	6 (7.2)
Yourself	2 (3.6)	3 (3.6)
Your Child	0 (0.0)	2 (2.4)
Your Parents	0 (0.0)	1 (1.2)
Your Spouse	0 (0.0)	1 (1.2)

Table 5. *Correlations, Means, and SDs for Variables used in Regression*

Variable	*1*	*2*	*3*
1. Social Distance Scale (stigma)	1		
2. Autism Awareness Scale (knowledge)	-.36**	1	
3. Relationship Count	-0.01	0.11	1
Mean	11.99	14.21	1.79
SD	3.61	5.24	1.49

**p < .01 (two-tailed test)

Table 6. *Knowledge (AAS) as a Predictor of Stigma (SDS)*

	b	*SE B*	*β*	*p*
Constant	15.51	0.84		
	(13.85, 17.16)			
AAS	-.25	0.06	-0.36	.000
	(-.36, -.14)			

alongside their neurotypical peers at the primary and secondary school level. In addition to the known educational and social benefits experienced by all stakeholders when students with ASD are included in the academic and social life of schools at younger ages, this has opened the doors for more individuals with ASD to pursue post-secondary education and participate in campus life (Maenner et al., 2021; White et al., 2011). However, less is understood about how to facilitate the successful inclusion of this growing and diverse population of students in higher education settings, resulting in lower levels of program completion (Gillespie-Lynch et al., 2015; Matthews et al., 2015) and overall well-being (Petcu et al., 2021).

To date, empirical studies informing best practices for inclusive programming for students with ASD enrolled in higher education programs are exploratory in nature, with promising implications for students with and without ASD (Gardiner & Iarocci, 2014; Tipton & Blacher, 2014). Indeed, the existing body of literature suggests a relationship between higher levels of education and higher levels of ASD knowledge and, in turn, less stigma towards individuals with ASD (Gillespie-Lynch et al., 2015; Obeid et al., 2015). Hypothesizing that mitigating stigma is precedent to addressing the social isolation ubiquitously reported by students with ASD across college campuses, the current study explored undergraduate and graduate peers' level of ASD knowledge and the types of relationships they report having with individuals with ASD to determine to what extent, if any, these factors predict level of stigma.

In part, the findings reported in the current study support previous literature. Specifically, our results are consistent with the findings reported by Gillespie-Lynch and colleagues (2015) and Obeid and colleagues (2015) in that ASD knowledge was identified as a significant predictor of stigma. However, it is noteworthy that knowledge only accounted for 12.8% of the variance in our sample, suggesting that other factors beyond knowledge contributed to stigma in our sample. As an extension of the extant literature, the current study characterizes the level of knowledge of ASD as moderately high across our sample, and highest among graduate students when compared to undergraduate students. This difference was statistically significant and supportive of the previously described relationship between higher levels of education and higher levels of ASD knowledge (Gillespie-Lynch et al., 2015; Stronach et al., 2019).

A notable finding in the current study is the relatively high frequency in which college peers characterized their relationships with individuals with ASD as *acquaintance, extended family member, friend,* and/or *fellow student*. However, no clear conclusions could be drawn regarding level of interaction (relationships) and level of stigma in the current sample, as the type

and/or frequency of relationships measured here could not be used as a proxy for interaction due to potential confounders, such as uncertainty as to what qualifies as having a "friend" with ASD in the age of social media. Knowing the types of relationships that are common between students with and without ASD on university campuses provides researchers and practitioners alike with the opportunity to facilitate social interactions that may mitigate stigma and promote social inclusion. Collectively, these findings provide a preliminary but promising framework for conceptualizing neurotypical peers' perceptions towards individuals with ASD and affirm a prioritized need for more informed programming at the higher education level.

Limitations

The findings of this exploratory study should be interpreted with some limitations in mind. First, a small purposive sample limited to students enrolled in the Colleges of Health and Human Services and Education participated in this study. Moreover, most of these students were White, female, and enrolled in graduate studies. Generalization to a larger population should be considered cautiously. Second, there were limited predictors appropriate for the regression model. Further investigation is needed to account for additional variables that might reliably predict stigma in this population. Finally, the internal validity of some instrumentation items (e.g., friend, acquaintance) may be questionable. Given the changing nature of social relationships in the age of social media, it is possible that these relationships are conceptualized differently across participants and may fluctuate with changes in the culture related to social media.

Implications for Research

Research around this topic is emerging and exploratory. Knowledge around ASD is a notable predictor, but likely an insufficient explanation for the pervasive and persisting bias towards students with ASD across the life span. Further investigation is needed to determine the mitigating role social relationships and/or frequency of interactions have on social acceptance, particularly during the formative college years. More sensitive instruments for measuring relationship/interaction are needed to determine the potential impact on stigma. Instrument items may need updating to more accurately reflect how social relationships are conceptualized by the targeted population (e.g., acquaintance vs. friend or romantic nomenclature), particularly in the age of social media. Additionally, better instruments for measuring the quality of relationships and lived experience of students with ASD in higher education are needed. Given the diverse perspectives and experiences of students in university settings, replication and extension of the current study across other colleges and disciplines is also needed to better inform programming across populations and settings.

Implications for Practice

University life is a limited and critical window in which attitudes regarding ASD can be positively shaped. Recognizing that proximity to neurotypical peers does not automatically equate to meaningful inclusion of students with ASD in educational settings, stakeholders in higher education have a time limited opportunity to identify and proactively address the formidable barriers that preclude students with ASD from experiencing the same desired postsecondary outcomes as their neurotypical peers in the areas of employment, independent living, and social networks (Petcu et al., 2021).

Knowledge of ASD is only a partial contributor to decreasing stigma among college students. Further, having only a moderate understanding of diagnostic best practices, gender disparities in diagnosis, behavioral manifestations, and the diversity of abilities and outcomes across the spectrum appears insufficient to promote more inclusive social behavior among college peers. In particular, educators can help foster both increased knowledge and interaction by emphasizing the similarities between neurotypical and neurodivergent students, and by scaffolding students' understanding of the more nuanced aspects of this diverse population to dispel misconceptions that perpetuate stigma. Extant research suggests that explicit skill instruction, peer-mentoring, improved efficacy and collaboration between offices of disability and student services, and a psychoeducational approach for faculty and staff need be considered if all stakeholders are to be expected to successfully interface with individuals with ASD in higher educational settings and beyond (Petcu et al., 2021).

Conclusion

The ASD population is not only rapidly growing, but also quickly aging out of the preponderance of research that currently informs professional and educational practices. That is, stakeholders concerned with improving postsecondary outcomes and overall quality of life for adults with ASD face a time-sensitive challenge. Results of the current investigation of university students' attitudes related to individuals with ASD indicated that graduate students demonstrated significantly higher levels of ASD knowledge than undergraduates, yet levels of stigma were similar across groups. Moreover, knowledge was identified as a significant predictor of stigma, but only explained a small percentage of the variance in our sample. Focused research and prioritized programming are warranted to judiciously remediate the concerning retention rates of students with ASD in higher education and to promote more meaningful access to academic and social life on university campuses.

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Correspondence concerning this article should be addressed to Leslie Meskin, Department of Social Work, Florida Gulf Coast University, 10501 FGCU Blvd S, Fort Myers, FL 33965. E-mail: lmeskin@fgcu.edu

Autism: Social Confidence Needed to Improve Post-Secondary Life Outcomes

Katherine Fowle
Liberty University

Abstract: Adults with autism spectrum difference (ASD) continue to struggle in gaining and maintaining employment. The data has remained the same for years, showing poor outcomes in job attainment, retention, and true reflection of skill level (Attwood, 2007; Kirby et al. 2020). The lack of the ability to self-advocate (Kutscher & Tuckwiller, 2020; Madaus et al., 2021) and increased level of anxiety, their social difference, and challenged sensory processing (McKeithan & Sabornie, 2020) are some of the barriers for adults with ASD in gaining and maintaining employment, and in being successful in higher education programs (Bouck & Park, 2018). This paper identifies a set of essential skills that support the success of individuals with (ASD), gathered from the insights of the lived experiences of the author combined with research on what works. Social Confidence Scope and Sequence (SCSS) created by the author is a resource for tracking students' progress on these targeted essential skills over all their schooling years, to help ensure their success in obtaining and maintaining the essential skills before they transition into post-secondary life.

To best support those of us with ASD, it is important to understand our difference. The brains of those with ASD process sensory input differently than that of a neurotypical brain (Attwood, 2007; Bogdashina, 2005; Grandin, 2011; Miller, 2014). The difference in processing of the ASD brain is just that, different, not less. As a result, how those of us with ASD express our understanding of situations and the world around us is different. Currently, this difference is often interpreted by neurotypicals as wrong (Attwood, 2007; Bogdashina, 2005; Fowle, 2021). When others around a person with autism do not recognize their neurodevelopmental difference and then, interpret their words and actions from a neurotypical point of view, the person with autism most often finds themselves being seen as less, wrong, or something worse (Attwood, 2007; Bogdashina, 2005; Fowle, 2021). To survive a workplace or higher education those of us with autism need to become self-aware of our autism and our specific strengths and challenges. The more we understand our difference, the more effectively we can advocate for our needs in education, employment and in relationships. This understanding needs to be developed for the student with ASD as early as possible.

Perspective

I found myself alone and in a fetal position under my desk at the end of several school days, crying uncontrollably. It was not the students, teaching, or paperwork. It was the result of repeated oppressive interactions with co-workers and administrators. In 2007, I started a teaching position in Australia. Many of my students were diagnosed with Asperger's syndrome. Not knowing much about Asperger's syndrome at the time, I started my now ongoing passionate research into ASD. Then in 2011, I was accused of being a bully by one of my co-workers. I was not aware of her feelings at the time. When I was informed of her feelings, it was weeks later and in the administration office. The

person who informed me was a district level disciplinarian. Once I understood what she was saying, my body started to go into shock and my fight, flight, freeze mode turned on. This was all new to me and I was desperate for information to gain some level of understanding. I asked the administrator who informed me, what was I doing that the co-worker felt was bullying toward her? The response was that I was rude. I asked what was I doing that was rude? She stated my behavior was abhorrent. None of her answers helped, I did not understand what was going on, and in trying to understand, the authority responded with anger. I was blatantly told my perspective was wrong and to accept the perspective of the co-worker. It felt as if the floor beneath me fell away and I was falling apart. I tried to pull myself together by continuing to gather information to make sense of what I was being told. How could I avoid getting in further trouble? How could I know someone else's perspective without asking? Asking a person what their perspective was, was not well received in this setting. I was so overwhelmed by these events, and I was offered no logical explanation, only harsh words and my income and career being threatened by something out of my control.

I plummeted to a very hopeless mindset. I did not know what actions, behaviors, words, or gestures I had to fix. I went through over a year of these constant misunderstandings and related actions of co-workers and administration which left me in such a state, that I found myself many days in a fetal position under my desk crying uncontrollably after everyone had left. This is what I had to do to clear my head from this mountain of emotions and confusion to get calm enough to get myself home. As a result of these devastating misunderstandings, I sought medical help. By November 11, 2011, I was diagnosed with Asperger's syndrome and severe depression and anxiety.

The ongoing issue of being misunderstood in the workplace and for students in the school setting affects a person's physical and mental health. Research has shown that the mortality rate for individuals with ASD is also higher (Cage et al., 2018; Danker et al., 2019; Hirvikoski et al., 2016; Horowitz et al., 2018; Kirby et al. 2020; McKeithan & Sabornie, 2020). We are dying on average at a younger age, and we have higher rates of death by suicide than our neurotypical counter parts (Kirby et al., 2019). Kirby et al. (2019) found that females with ASD were "over three times as likely to die from suicide as females without ASD" (p. 658) between 2013 -2017. During the time I was abused in the workplace from 2011 to 2012, I was asked for the first time in my life and several times after, if I was going to hurt myself, by the ones who were hurting me. On my journey back to health, one of the things that I realized was that I do have a right to be heard and my perspective does matter. It may be different, but it matters as much as anyone else's perspective. Our students and employees with ASD need to know this too. This understanding can be supported by our actions as educators, family, co-workers, and employers toward those in our lives with autism; their perspective does matter.

Understanding the Difference

One of the main differences in our neurodevelopment is in how our autistic brain processes sensory information coming in from the world around us (Fowle, 2021; Grandin, 2011; Miller, 2014; Mosely & Pulvermüller, 2018). Our autistic brain does not have the innate ability as a neurotypical brain does; where it can efficiently sort all sensory input (Attwood, 2007; Grandin, 2011; Miller, 2014; Mosely & Pulvermüller, 2018). A neurotypical's brain sorts the input from what should be softened as background

noise to what information needs to have the persons attention, so it is heard instantly. For example, softening background noise in a restaurant so the person can hear another person next to them speaking to them (Attwood, 2007; Grandin, 2011). Those of us with ASD must learn to give ourselves time for our brains to identify and process all the sensory input from each new environment or setting we walk into and to help us avoid the sensation of being overloaded. When our brain has had sufficient time to process, then we can begin to effectively interact with others (Attwood, 2007; Fowle, 2021; Grandin, 2011; Miller, 2014). Often, the behaviors others may see in us, such as glazed eyes, fidgeting, poor impulse control, or anxiety related behaviors, may occur when we are processing sensory input or working out social encounters.

When I walk into a classroom where a teacher has rearranged the furniture or moved a few items, I feel the change in all my senses, and coming in through my skin, like a snow globe all shaken up. I can be seen pausing at the door, even before I offer a greeting, as I let everything settle down. For me, this is the feeling of my brain as it sorts all the sensory input where it feels it should. While my brain is doing this my body feels like the amygdala has woken up and I am standing frozen. If the faculty in this class know and accept that I am autistic, they will continue as usual until I am ready to continue with why I came to the room. When I am ready, I offer the greeting and move forward with my task. If it is a setting where my autism is not known or accepted, the response of the faculty is often of being offended that I did not greet the moment I walked in. Now most of what I described is not consciously controlled, so even if I wanted to offer the greeting required by the person(s) offended, I could not until I am at base or remember that I missed it after I am at base. This interaction and delay on my response may be less than a minute, but the reaction of the harsh judgement lasts much longer. This pattern if repeated is destructive.

These seen behaviors of the person with autism represent the tip of the iceberg of the extensive amount of processing under the surface going on in our brains working out the meaning of all the environmental input we are exposed to. Knowing how our autistic brain works, helps those of us with autism and those who are supporting us know more precisely what strategies or interventions to use to support our learning and our access in the workplace. Rather than seeing the behavior as from a neurotypical, it is more productive for those of us with ASD, when neurotypicals keep an open mind to the idea that the behavior they see is coming from an individual with autistic wiring. From this perspective a more accurate interpretation of our actions or words can be made. Considering the analogy of the iceberg, those that do not understand the true meaning of our behaviors, words, or actions of the iceberg or person with autism, represent the Titanic. When the iceberg (the autistic) and the Titanic (person with the harsh judgement) run into each other, is it the iceberg's fault or the Titanic's fault? The reality is that the iceberg often, if not always, gets the blame.

In 2015, I stepped away from teaching within the Australian school system to start my own business of being an autism education consultant and to salvage my health. I was just getting sicker and sicker within the school system. It appeared that the school system at the time did not want to learn about autism in professional adults. One of my principals during this time said to me, that she already knew about autism and did not want a very short book I offered her on how to support an employee with autism. The principal felt insulted; she stated that she has had over 15 years working with students on

the spectrum; she knows autism. This comment from the principal was offensive to me. I and others with ASD use an immense amount of energy and effort to understand neurotypicals every day (Attwood, 2007; Bogdashina, 2013; Fowle, 2021). Being autistic, the challenges of living in a non-autistic world that often does not want to know or understand or feel they know autism, are common barriers to the autistic person's ability to access success in the workplace and in school (Scott et al., 2017; Scott et al., 2019; Spoor et al., 2021). What works is supporting a person with autism with an open mindset and attitude of discovery. The results of Dreaver et al. (2020) research where they conducted semi-formal interviews with employers of employees with ASD on what works, they found that the key to supporting person's with autsim success in the workplace was the employer's level of "knowledge and understanding of ASD underpinning their ability to facilitate employment" (p. 1657). When employers truly try to understand the autistic perspective and apply knowledge effectively in the workplace, they are offering their employees with ASD a safe place to work.

Recently after years of trying to help others understand, one administrator in my current employment began to see my difference and validate it. Rather than seeing my behavior as less or wrong, he accepted it for the way it was intended by a person with autism. This administrator started to see me as a perfectly capable autistic and not a broken neurotypical. He took the time to get to know me and started accepting that I do process information differently, and that we both needed to take time to get on the same page of a situation together. This type of response from an employer is uplifting and supports the well-being and productivity of the employee with autism.

Awareness of the Amygdala Effect

Another important factor to consider in supporting the person with ASD is the effects of their larger than average amygdala. The amygdala within an autistic brain is on average larger than that within a neurotypical brain (Grandin, 2013). The amygdala is a small part of the brain. It has the job of protecting a person from danger by identifying danger and getting our body ready to be safe. The amygdala turns on our fight, flight, freeze mode. It responds quickly to danger by rerouting oxygen from the brain to the muscles so a person can get to safety quickly or fight off danger or be still to hide from danger. It is very helpful for a person with autism to know what stimulus their amygdala responds to.

The amygdala behaves like a reflex in that it turns on, on its own. For an autistic person, it may switch on in response to a variety of non-dangerous sensory experiences such as loud noises, crowds, or to too many changes in a schedule (Attwood, 2007; Fowle, 2021; Grandin, 2013; Miller, 2014). The amygdala could be switched on all day. This is not healthy. When an autistic person appears anxious or angry, it could be a sign that their amygdala is turned on. Students and employees with autism need to know their triggers (e. g., a smell, a sound, over heated, lighting, etc.; Attwood, 2007; Fowle, 2021; Grandin, 2013; Miller, 2014) that turn on their amygdala, so they can act before the amygdala does. It is important that educators and administrators respond with a supportive manner and tone and offer a safe place and time for the person with autism to come to base (Attwood, 2007; Fowle, 2021; Grandin, 2013; Miller, 2014). A drink of water is often welcomed during these times as well, as these episodes can leave us with a dry mouth and tired from the energy expelled.

Belonging

Another area of considerations is that of the communication difference and the need for gaining a sense of belonging. A student or employee may be able to offer greetings, make requests and answer questions, but looking closer this same individual with ASD may not be initiating conversations, making comments, or demonstrating the social-communication skills needed to develop and maintain a friendship or a positive working relationship (Attwood, 2007; Bogdashina, 2014; Fowle, 2021). These are the parts of communication that make a huge impact on the quality of life for our students and employees with ASD (Attwood, 2007; Fowle, 2021). Consequently, supports in these areas need to be made available in workplaces and schools to promote understanding as a part of the expected culture in workplaces and in the schools. The students and employees with autism have a need to belong, but how it is expressed may be different from a neurotypical person.

Often, our efforts to connect with others is misunderstood (Attwood, 2007; Fowle, 2021; Bogdashina, 2013). We do desire social interactions with others, but we can struggle in making connections with non-autistic individuals, unless we have a common interest. Another factor is in the length of time we engage socially, which will often be shorter than our peers before we need a quiet break to restore energy. Tony Attwood (2007), a respected international expert on Asperger's and ASD and author of several books including *The Complete Guide to Asperger's Syndrome*, described this autistic social difference with the following analogy. Think of social interaction within a cup and when the cup is full it overflows and creates a mess. For neurotypicals the cup is often very large and for some it rarely gets full. However, for the autistic individual, our cups are various sizes of small. It is then important for us with ASD to be aware of our body signs when we are approaching the rim of our social cup and to then take a break (Attwood 2007; Biel, 2014; Miller, 2014). We can support students and employees by giving them access to restorative spaces or calming resources (e.g., music, beanbag, weighted blanket, and time to not be required to talk).

The Essential Skill

As a result of years of experiences in using several evidence-based interventions, programs, and curriculums for teaching social skills and emotional management, it became clear that none existed that addressed all the needs of every student (Kasari et al., 2021). Out of all the evidence-based interventions and practices, on social skills and emotional regulation, what are the essential skills the students with ASD need? From the lived experiences and reviewing the research on evidence-based practices the list of the essential skills was established:

- Emotional Understanding and Regulation
- Maintaining Self-Control and knowing personal sensory needs
- Thinking Skills- flexible thinking
- Following Through with a plan, use of reflection, and the ability to make appropriate adjustments

No one curriculum, program, or intervention works for every student to the same degree and for some not at all. No program has all the elements or skills a student with autism may need. What is important is to be able to determine which elements are needed by a student that they can walk away with so they can continue to grow their Social Confidence well beyond their high school years.

Kasari et al. (2021) stressed that "[a] sequence or combination of interventions [are needed] to make significant and lasting

Figure 1. *Social Confidence Scope and Sequence (SCSS)*

Social Confidence: Scope and Sequence
Created by Katherine Fowle M.Ed. (2019)

Unit 1: Foundation Skills

a) Breathing and learning to be still
b) Movement Fun-build interoceptive awareness, and strengthen regulation of vestibular, and proprioceptive senses
c) Build Emotion Vocabulary
d) Identifying emotions using facial, posture, or tone clues
e) Using eyes and ears to accurately identify the feelings of self and others within situations and validating the various perspectives.

Unit 2: Maintaining Self-Control

a) Individual's awareness of bodily response at various levels of anger and/or anxiety
b) Identify personal triggers for anger and/or anxiety
c) Personalized toolkit for appropriate and affective emotional response to various levels of anger and/or anxiety
d) Identify the problem separate from the emotion

Unit 3: Brain Power

a) Defining Cool, Weak, and Aggressive choices (Peterson & Adderly, 2002)
b) Linking consequences with choices
c) Identifying the effects of our choices on others
d) Flexible Thinking

Unit 4: Follow Through

a) Matching facial, tone, body, and posture with intended message
b) The importance of personal space and timing
c) "Cheat sheets" for successful social interaction
d) Application of skills in role plays for realistic scenarios
a) Generalization and maintenance of these Social Confidence© skills.

improvements" (p.37) to meet the social emotional learning needs of our students with ASD. For our students with autism social emotional development, Social Confidence: Scope and Sequence (SCSS; see Figure 1) is a guide for thoughtful and intentional planning and tracking of their progress in the essential skills over all their schooling years. SCSS was created from the culmination of lessons gained as an autistic professional educator, from my lived experiences growing up autistic, decades of teaching special education, and a result of the extensive research on the topic. Often, an ad hock approach is used for addressing the social emotional developmental needs of students and their progress on these skills is not tracked from year to year. This creates a situation where students with autism are ill prepared for work or higher education. This is evident in the research on the rates of un/under employment of adults with ASD (Lallukka et al., 2020) and the struggle for success in higher education for students with ASD (Jansen et al., 2016). To avoid these poor outcomes, the SCSS can be used to guide educators in ensuring the essential skill for students with ASD are addressed, so they are prepared to navigate a non-autistic world.

In Figure 1, the SCSS units and subunits are listed. The Foundational Skills are those of emotional understanding and regulation. The Maintaining Self-Control skills are those of self-control and of knowing personal sensory needs. The Brain Power skills are those of thinking situations through and flexibility in thinking. The Follow Through skills are those of applying skills explicitly taught to following through with an established plan, using reflection to grow, and making appropriate adjustments to keep their plan on course.

By first using the SCSS to establish a baseline of the targeted students for each of the skills covered within the four units, the SCSS can then be used to map out a learning path to follow to get the students where they need to be with these skills. This guide and tracking system provide a tool to help ensure the continuity of learning of these skills over time for our students with ASD. The following are brief introductions to each unit of the SCSS, a complete description of all the components of SCSS is beyond the scope of this article.

Foundation Skills: STOP

In unit one of SCSS, the focus is on the skills to come to base and to stay at base—an emotional calm state where one can think clearly, again. Skills in this unit include deep breathing, being still, sensory needs awareness, and emotional awareness of oneself and of others. The ability to identifying their sensory needs and how to appropriately meet those needs. The goal of developing these skills is to ensure the student has the ability to come to or stay at base during a social incident and demonstrate understanding of the information around them that will guide them to an appropriate response.

Maintaining Self-Control

The focus of Unit 2 is on the skills to appropriately manage strong emotions that often leads to out of control behaviors and to poor decision making. To be able to manage strong emotions, students need to understand how those emotions manifest in them. Skills required include identifying their body's early warning signs of a strong emotion, knowing their triggers for strong emotions, having a plan, and using a tool kit to manage those emotions before getting out of control (Attwood, 2004; Beaumont, 2010; Petersen & Adderley, 2002). Other skills from this unit are those the student needs to understand a problem separate from the emotions (Attwood, 2004; Beaumont, 2010; Petersen & Adderley, 2002). The main purpose of this unit is to track the development of those skills needed by students who suffer from out-of-control levels of emotion.

Brain Power: THINK

The focus of this unit is on the thinking skills needed for developing a plan to respond to social situations. Included in this unit are skills of analyzing options and their possible consequences, understanding other perspectives, and flexible thinking skills to be willing to adjust based on new information. Understanding perspectives of others is a skill both students with autism and without autism can benefit from. It would be very helpful for those of us with ASD, if the vast amount of neurotypical people we encounter on a daily basis would also take the time to understand the autistic perspective in social encounters with the same level of effort that the person with autism takes daily to understand theirs (Chou, 2020; Friedman at al., 2019; Hayward et al., 2019). Two great resources for explicit instruction in flexible thinking are *Unstuck and On Target* by Cannon et al. (2011), and *Secret Agent Society* by Beaumont (2010). There is a descriptive list of resources from the autistic perspective in how the suggested materials

support the learning of the skills within the SCSS for our students with autism.

Follow Through: DO

Currently, the fourth and final unit in the SCSS focuses on the skills needed to put all the previous skills into action. The skills in this unit include the ability to match facial expression, tone, and body posture to send the intended message to the targeted receiver, the use of appropriate timing and proximity for the delivery of message, and the ability to smoothly use taught scripts as needed for common situations (e.g., greetings, requests, and small talk; Attwood, 2004; Beaumont, 2010; Mazzotti et al., 2021; Petersen & Adderley, 2002). The required skills would give students with autism the ability to effectively regulate their emotions and behaviors, and to interact effectively with others in professional and casual situations including within a friendship group.

Reciprocal Communication: Belonging

The complete SCSS version incorporates a list of specific communication skills for developing conversational language, and other language skills needed for gaining and maintaining friendships, and the expressive language needed for self-determination skills--self-awareness, and self-directed problem solving (Friedman et al., 2019; Raley et al., 2020; Rowe et al., 2021; Sreckovic et al, 2021; Wong et al., 2020). These skills support the ability of a student or employee with ASD to gain a sense of belonging in their school or workplace. This sense of belonging and having friendships in their lives often alludes our students and adults with ASD. This is an area of development for our students with ASD that if not addressed effectively can have lasting and devastating effects on their quality of life and well-being.

More Lessons from the Lived Experience

The psychiatrist that the school system in Australia sent me to, wrote in her report to them that I was the victim of workplace bullying and harassment. By their actions they tried to take away my sense of belonging. The evidence of this was in the paperwork they sent to the psychiatrist. The behaviors described in their paperwork included but not limited to being sent to an office across campus from the special education staffroom and teaching space, restricted from having casual interactions with the special education team members and being given a directive not to enter the special education staffroom except to use the bathroom. If I needed an item such as a document, I sent to the printer I had access to which was in the special education staffroom, I had to wait outside the door of the staffroom just as the students were required to do, until someone was willing to acknowledge me at the door and then were willing to hand me the document. I was not allowed to come to group events such as staff gatherings for birthdays or holiday celebrations. When I did get my diagnosis of Asperger's syndrome, the school system did not accept my diagnosis. In the end, I was not given any constructive feedback to help guide me at the time to make the improvements to be better understood.

Initially not knowing my diagnosis, combined with the fact that I was excessively asking questions to understand what was going on made the situation worse for me each day. By the time I did get my diagnosis, the school system was unable to let go of their perspective of me as a bully. It was never made clear to me at the time, why the accusations by the staff member of me being a bully started and why they were so readily accepted by administration before anyone spoke to me to let me know what was going on. This confusion was a very scary time for me. However, once I was given the diagnosis,

it helped me to have a place to start from to begin to unpack all the events happening at work. The awareness of my difference gave me an opportunity to learn and identify and develop the skills in the areas I was missing in gathering social information I needed to improve my social responses to my challenging co-workers. Self-awareness gave me confidence to take action to improve my situation. The same effect happens for students with autism who become self-aware of how their autism presents.

Conclusion

Students and adults with autism need to become self-aware of their autism, so they can properly advocate for their needs when necessary (Attwood, 2007; Fowle, 2021; Grandin, 2013; Madaus et al., 2021). These needs will vary with each person. For example, some of the needs may be related to their sensory difference or to support their executive function skills where they might ask for dimmed lighting, natural lighting, quiet space, or organizational tools such as a visual task analysis of assignments or duties, etc., so they can perform at their best (Attwood, 2007; Biel, 2014; Fowle, 2021; Grandin, 2013; Miller, 2014). If students do not have this awareness or confidence to advocate for their needs, they will struggle in which ever path they choose such as the workplace or higher education or community participation.

Further research is needed in supporting students and adults with ASD in both the workplace and school. It is encouraged that specific research on the use of SCSS with a larger group of educators is conducted to document its efficacy as a guide on effectively tracking and mapping out the path for teaching the skills required by their students with ASD and in using this guide to select appropriate tools to teach those required skills. A closer look at the neurodevelopment difference and needs of those of us with autism is warranted. I also implore teacher preparation programs and researchers to move away from the deficit model of teaching those of us with autism to first, learning our neurodevelopmental difference to then, develop teaching methods based on this new information. With a greater understanding of our perspective and our autistic wiring that effects our interpretation of the world and social interactions, perhaps soon, the harsh judgements will become rare and the supportive responses to our difference will become the norm.

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The author is the developer of the Social Confidence Scope and Sequence resource mentioned in this article. Correspondence concerning this article should be addressed to Katherine Fowle. Email: kafowle@liberty.edu

Incorporating Life Skills and Community-Based Learning into Elementary Special Education Curriculum

Kristyn Stetson
Naples, FL

Abstract: This paper explores the need for life skills education and community- based learning in elementary self-contained special education classrooms. It looks at the importance of incorporating life skills and community-based learning into the curriculum and IEP goals and how this can occur. Incorporating evidence from previous research, personal interviews and personal experiences as a teacher, this research demonstrates that students benefit from these types of teaching methods in the short and long term. It argues for further research into this scarcely researched topic and for the incorporation of these teaching methods into more self-contained elementary classrooms. This paper will assist teachers and district officials in their efforts to prepare students to be functioning and contributing members of the community and society.

"What is seven plus eight?" This question is met with lots of blank stares from the students in my self-contained special education classroom. A class that is made up of children who benefit from special services within a classroom that is compromised solely of children with special needs (US Legal Inc., n.d.). The nature or severity of the disability is such that education in general education classes with the use of supplementary aids and services cannot be satisfactorily achieved (Turnbull et al.,2009). "We had 1,207 dollars in the bank and today we earned 58 dollars at the school store. How much money do we have now?" This question is met with students clamoring to come up to the board to start solving the addition problem. What is the difference between those two questions? Not much, the addition is still the same 7+8; however, the students are much more interested in the problem when it deals with the money they earned that morning at the school store.

I teach in a multi-grade self-contained special education classroom for students with significant intellectual disabilities. My students are taught on a modified curriculum based off the general state standards. Students are educated on grade-level access points. These alternate achievement standards are aligned to the Florida standards and target the most important content of the general standards. Access points are delivered at the level each individual student requires in order to be successful. Students can be educated in self-contained classrooms or general education classrooms (ACCESS, 2016). These standards must be taught; however, the way that they are taught is more flexible. Many teachers in self-contained classrooms receive minimal textbooks, workbooks or materials to assist in teaching standards. The benefit of this is that teachers are able to curtail their lessons to meet the needs of the individual students in their classrooms.

My students struggle to grasp new concepts and learning is a much slower process. Giving students the opportunity to experience real life skills helps them understand how this will affect their future (Rich-Gross, 2014). Two years ago, I started a school store with my students. What started as a way to provide an opportunity for my students to interact

with students in general education classrooms and practice communication and life skills, has snowballed. Students order the supplies they want to sell at the store and decide how much to sell the items for to make a profit. They keep track of how much money they spend buying items and how much they earn when they sell the items. Due to the success of the school store, I was able to start a weekly cooking program with my students. They look up the recipe, learn how to make the recipe and what ingredients are needed, and then follow the steps of the recipe when cooking. This program has moved beyond life skills education, to community-based learning as well, using a life skills approach to teach subject matter. Meaning that participatory teaching/learning methods are used to help learners develop knowledge and psycho-social skills needed to use knowledge to inform and carry out behavior (UNICEF, 2003). My students started shopping for the ingredients themselves. The students create a visual list of the items needed for cooking. Then they figure out which aisle the item is in, as well as the price of each item, using the store's website. Once a month we take a school bus to a local grocery store to go shopping. Students have to follow their list, look for the specific items, ask for help if needed, communicate with the cashier and pay for the items. Recently, students started taking orders for sandwiches from staff members at school and then ordering the sandwiches when we go shopping. Over the past two years, my lessons have slowly become more centered around life skills and community-based education. All the standards that I have to teach are able to be incorporated into these lessons.

The school I work at has administration that fully supports the increased inclusion of life skills and community-based learning in my classroom. My school has grades kindergarten through fifth grade. There are three self-contained special education classrooms and 39 general education classrooms. The school I work at also is the top performing school in the district, so we can initiate many new programs. We also have the means financially to do so.

Statement of the problem

Currently, I am the only self-contained primary classroom in the district that uses these types of programs to this extent. The majority of community-based education happens when students are in secondary education settings, specifically the transition program. According to the Individuals with Disabilities Education Act (IDEA), transition services which begin no later than age 16, must include appropriate measurable post-secondary goals related to training, education, employment and if needed independent living skills. This can include community experiences, daily living skills and functional vocational evaluation (Turnbull et al., 2009). There is currently scarce research on the importance of teaching life skills and community-based learning to students in primary classrooms. Most research seems to be focused on high school and transition aged students. This research will look at the importance of incorporating life skills education and community-based learning into the curriculum of primary students. Results may assist other teachers and district officials in their efforts to prepare students to be functioning and contributing members of the community and society.

Purpose of the study:

The purpose of this study is to explore the need of life skills education and community-based learning for elementary-aged students in self-contained modified curriculum special education classrooms in the county, through the teaching experience and perceptions of local teachers and other school personnel.

The research questions of the study included: (a) What are special education teachers' perceptions about the need for life-skills and community-based education curriculum in primary self-contained special education classrooms?, (b) How can teachers implement this curriculum, while remaining aligned to state standards and IEP goals? , and (c) What are parents of students in special education classrooms, perceptions about the need for life-skills and community-based education curriculum in primary self-contained special education classrooms?

Significance of the study

Much of the research on this topic is from secondary school settings. The need for life-skills education and community-based learning for elementary aged students is something that is missing and needs to be looked into. Students with intellectual disabilities have a harder time focusing and retaining facts. This makes it imperative that teachers emphasize why there is a need to learn certain material. The relevancy is the key to focus, learning, and retention for this group of students. Learning is the active process of acquiring and retaining knowledge, so it can be applied in the future situations the person may encounter (Sousa, 2001). There is no specific amount of time to form a habit. Some habits take 20 days, and some take over 250 days (Clear, 2004). Children with intellectual disabilities, like my students, learn and develop at a much slower pace. This can mean if it takes a child without an intellectual disability sixyears to learn the appropriate social skills to interact with others in a grocery store, it could take a child with a disability nineyears. Researcher shows teachers of students with intellectual disabilities need to provide direct instruction in skills outside of the general curriculum. This includes money concepts, time concepts, independent living skills, self-care, community access and vocational training. The most effective way students learn these skills is in settings and activities in which they can apply the skills. Allowing multiple opportunities to practice the skills in different settings is also beneficial (Intellectual Disabilities, 2013). This leaves the question, why do schools traditionally not start community based learning and a focus on life skills education, until students are in high school? As the Individuals with Disabilities Education Act (IDEA) states, early intervention helps to maximize the potential for individuals with disabilities to live independently in society (Turnbull et al., 2009).

Method

This research is qualitative since the goal is to gain an understanding of the underlying reasons, opinions, and motivations that teachers have when it comes to life skills and community-based learning. Interviews of teachers and faculty that teach or interact with students educated in a self-contained classroom at one specific elementary school were conducted and recorded.

The participants are as follows: two teachers from self-contained special education classrooms, one speech language pathologist, one occupational therapist, two district exceptional student education administrators and two elementary school administrators. There also was one parent of a student who graduated from a self-contained special education classroom participating. There was one male and eight female participants. These participants were picked for a few reasons. The first is that it is a convenience sample. The school district where the research was conducted has a long process to conduct research involving staff members. However, research conducted can be without district review, if it is at the school that the researcher works at. Additionally, the principal must give permission for this to take place at

his/her school and the staff members must volunteer to be interviewed during non-academic times.

Another reason that these participants were selected is that they have a variety of experiences and differing years as an educator. They have been in the field of special education between eight and forty-one years. Having individuals with different backgrounds is beneficial. An occupational therapist and speech language pathologist might have differing ideas than a special education teacher. Having the view of administration is helpful, since they tend to focus on yearly progress of students and making sure the state standards are followed. Having the views of a parent whose child went through the entire education process in a self-contained classroom is beneficial because that is the population being affected by the research. See Table 1 for a description of participants.

Interview Protocol

As stated above, all the semi-structured interviews were conducted in person and recorded in order to be transcribed. There were 20 questions asked to participants. The questions dealt with the importance or impact of teaching life skills in primary special education classrooms. They also probed the importance and impact of community-based learning in primary special education classrooms. Additionally, questions about the implementation of these two types of learning were asked.

Results

Throughout the interviews there were three common themes that occurred across the board. The first theme was that the teaching of life skills and use of community-based learning in elementary self-contained special education classrooms help to set the foundational skills for students. This can assist them in gaining more skills and help to create even better outcomes and job employment opportunities when they graduate from school. Functional life skills are important and can be built upon basic academic needs. These skills should be taught in elementary school in order to increase the functional competence in later years (Rich-Gross, 2014). The content of educational programs should be organized in a way to improve the life skills of children (Kurtdede-Fidan & Aydogdu, 2018). The United States education system has a one-size fits all approach to accountability and

Table 1. *Participants*

Participant	Gender	Years of Experience	Occupation
Participant 1	Female	33 years	Educator
Participant 2	Female	8 years	Educator
Participant 3	Female	25 years	Educator
Participant 4	Male	40 years	Educator
Participant 5	Female	18 years	Educator
Participant 6	Female	16 years	Educator
Participant 7	Female	27 years	Educator
Participant 8	Female	23 years	Educator
Participant 9	Female	21 years	Parent

testing, which leaves less room for the teaching of life skills and vocational training for students with disabilities (Rich-Gross, 2014).

The ultimate goal of education is to assist students in building skills to be successful in life. According to Ayres et al. (2011) the appropriateness and meaningfulness of a child's educational program can be measured by whether or not the educational gains of that student prepare them to have an independent and productive adulthood to the maximum extent possible. The incorporation of life skills and community-based learning into the curriculum was a big focus of most of the educators and the parent interviewed. Previous research has found that students who have moderate to severe disabilities can benefit from a curriculum that includes instruction in functional skills needed to successfully transition into adulthood (Ayres et al., 2011). Just as the individuals interviewed noted, researchers have also found these skills need to be balanced with the teaching of core content (Collins et al., 2010). According to Collins et al., (2010) there are two ways to do this. The first way is that teachers can identify core content that can be embedded in instruction while teaching life skills. The second way is identifying functional applications that can be added as additional information when teaching core content. In order to do either of these teachers need to first identify grade-level standards. Next, they determine and prioritize the skills students will need in order to function independently in adulthood. Then, the teacher aligns these functional objectives with core content standards. After this, the teacher needs to decide where the instruction will take place and identify the materials needed in order to facilitate the instruction. This can be in the classroom or the real world (Collins et al., 2010).

Administrators and educators both discussed how easily life skills can be added into the curriculum. It can be as simple as a child working independently on a math task or practicing washing their hands after using the restroom. The life skill of cooking can incorporate math and reading into one hands-one lesson with real life applications (Interview, Participant 5).

The second theme was a need for more support and resources at a district level in order for these types of learning to take place. Support from the district will ultimately cause a trickle-down effect to building administration and then on to teachers (Interview, Participant 6). One of the top reasons that special education teachers leave the field is due to a lack of support from others, specifically administration and colleagues at school (Fore et al., 2002). In a study by Kozleski, Mainzer and Deshler it was found that special educators feel that others may not understand their practices and the challenges they face (Kozleski et al., 2000). Additionally, many times they are the last to receive resources from the district of the school (Billingsley, 2005). One educator and the two school-based administrators interviewed discussed a lack of training about life skills and community-based learning in college programs as well as from the school district (Interview, Participants, 7,8 &9) Since community-based learning happens outside of the school building, funding was a big issue that some educators, all administrators (district and school based) and the parent interviewed saw as an issue to the implementation (Interviews, Participants 1,2,5,6,7 &9) . The one suggestion that every participant noted was an increased awareness of the benefits of life skills and community-based instruction would help to get others on board with this type of learning. One district special education administrator discussed that in order to get more classrooms focused

on life skills instruction and community-based learning, it would be helpful for it to come from the district ESE department as a focus. That would allow building administrators to know that this type of learning is allowed and helps to empower teachers to implement this type of learning (Interview, participant 6).

The final common theme were issues that could arise when implementing these types of learning. The biggest setback noted was the perception that people within the community, parents, other educators or the student would have. One teacher interviewed acknowledged that there might be pushback from parents or administrators who do not understand that standards are being hit or that the students are not being held to a high enough standard (Interview, participant 3). Participant 4 echoed the idea that "there could be some blowback from parents who think that their child should only be working on academics in school and not life skills" (Interview, participant 4). Multiple educators noted that when students with special needs are out in the community, a lack of community members understanding how to interact with them can create hurdles (Interviews, participants 2, 3, 4). If community members perceive students with special needs as disruptive or are uncomfortable interacting with them due to a lack of exposure, it will be harder for teachers to find community partners in order to implement community-based instruction. Students might also create pushback because they are unfamiliar with different aspects of the community or life skills and have difficulty adjusting (Alias, 2014). This could happen because it is often hard for parents to take their children places when they are not at school. Exposure to the community improves student's understanding and expands their horizons and experiences (Interview, participant 6).Parents and school administration also must be on board with learning in what seems like a non-traditional way. Likewise, if parents or administration see the teaching of life skills as less important than the core subjects (reading, writing, math, science, social studies) it could cause a barrier if teachers want to implement that into their curriculum. As multiple participants as well as published research noted, teachers often encounter pushback when they want to incorporate life skills into the curriculum due to the heavy focus on testing and test scores (Cassidy et al., 2018).

These three themes will be the focus ofthe rest of the paper. Suggestions on how to overcome obstacles, incorporate life skills and community-based learning into state curriculum and ideas on how to garner support will be discussed. These will be based on interviews as well as current research. The elementary years are where the foundation of education is laid. The inclusion of life skills and community-based instruction can help to provide a solid foundation for students to build upon as they reach high school and transition programs. There are many ways that life skills can be woven into the daily lessons in special education classrooms. Community-based learning automatically includes the teaching of state standards. Those standards are just taught in a different environment.

However, in order for life skills instruction and community-based learning to take place in self-contained special education classrooms in elementary schools there needs to be greater support. This includes resources and funding from the district level. Additionally, perceptions of all stakeholders need to be positive and accepting of this type of learning. Special education teachers and parents are at the forefront of the fight to provide the best education possible for students with special needs. Their voices and

opinions need to be heard. This research does exactly that. It gains the perspectives of those who are involved in the education of children with special needs on a daily basis. Their suggestions and ideas can help to shape the future of special education and help others to see the importance of teaching life skills and providing community-based instruction for children in elementary self-contained special education classrooms.

Discussion

Throughout the research process, there was ample evidence, both in current research as well as in the interviews conducted about how important life skills are for children with special needs. "If they [students] don't have those life skills, it's going to be a lot harder for them to obtain jobs later on, which is our ultimate goal. It is going to take them a lot longer to be able to form these habits and make these choices, so the sooner we can start providing them with the education, the better it is going to be for them (Interview, Participant 3)." This educator's idea resonated with many other participants in this action research. A parent noted that she "wished that these skills had been started earlier," when her daughter was in school. She felt it would have helped with fine motor, self-confidence, intellectual and physical skills (Interview, Participant 9). Another educator mentioned that "most of our students learn incrementally, and they need smaller chunks, so we need to start laying the foundational skills at the elementary level so that it is not brand new by the time they get to high school" and the transition programs (Interview, participant 4). Based on the findings the researcher concludes that life skills education should be a focus starting as soon as a student enters school. "Most of our students are able to obtain the same skills as their same age non-disabled peers" We need to "extend the runway" because the "plane can get up, they just need a longer runway, or more time to practice and learn those skills (Interview, Participant 6)" There are a plethora of ways that this type of learning can take place. Community-based learning is one avenue that has ample benefits to the education and life success of students with special needs. Interviews and current published research support the research question of the importance of incorporating life skills and community-based instruction into elementary self-contained special education classrooms. Every participant interviewed had the view that these skills should be an integral part of the education of students with special needs.

While life skills and community-based learning seem to be important to educators, incorporating them into the curriculum seems to cause issues. Educators are tasked with teaching the state standards and mandated curriculum. Special education teachers are also legally bound to meet the IEP of each child who has one. The suggestions of five educators interviewed supported the little research that has been done on incorporating these skills into the curriculum. While state standards do not specifically spell out how to include life skills or community-based learning, incorporating these methods into the curriculum just takes a little bit of creativity. The teacher simply needs to look at the standard and see how it could be taught in community-settings or using life skills. Life skills or the community can become the vehicle for state standards to be taught (Interview, Participant 6).

Conclusions, there are many ways to incorporate life skills into IEP goals and the curriculum. All one has to do is look at the standards and a life skill that he/she wants to teach and see how that skill can be taught within the standard. An educator noted that "standards, as written right now are life standards. If you think about a standard that a

student will read and comprehend or compare and contrast that could be a recipe." Fractions can be taught while cooking using measuring cups. The skills are simply being put in a real world situation (Interview, Participant 5). Money standards can be taught while out at a store, communication IEP goals can also be taught out in the community. The research shows that there are ways to incorporate life skills and community-based instruction into the curriculum, while still teaching the state standards. IEP goals can also be written to incorporate life skills. In years past "almost every student kindergarten through second had life skills goals." IEPs included goals like counting money, learning phone numbers and addresses, but "with the advent of testing we've gotten away from that" and it is easier to take data by tallying a decrease in behaviors as opposed to an increase in social skills (Interview, Participant 5)." Both educators and those in administrative roles suggested that IEP goals can be written to include more life skills, like hygiene, money recognition, independent functioning skills and social skills. Under IDEA a student's IEP includes academic and functional goals and objectives that link to the student's present levels as well as target skills that are linked to academic performance and adult outcomes (Turnbull et. al., 2004).

Implications

With the research findings, many implications have been brought to the surface. So how does this research transfer to the education of students with special needs? Research has shown how important these skills are for students to have. The interviews of current educators in the field of special education has shown that teaching the skills at the elementary level, instead of waiting until high school has ample benefits to the student and his/her educational career and life after school.

The incorporation of life skills and community-based learning in elementary school has implications for all levels of educational personnel. Teachers are the ones at the front line and will have the biggest impact on their students. This research has recognized a strong need to find ways to incorporate life skills activities into the curriculum. When designing lessons teachers should start to look at how life skills can be incorporated into the presentation of the lesson. Teachers also need to incorporate more life skills when writing IEP goals for the students in their class. The researcher can assume, based on interviews and prior published studies, that when teachers implement this type of learning into elementary classrooms, students will have higher success rates in their academics as well as personal life.

However, it should not just be left up to teachers to figure things out. School administrators play a big role in the incorporation of life skills and community-based instruction into the curriculum. One administrator interviewed was right on with saying "investing time and energy discussing or supporting them in creative endeavors to integrate these skills into the curriculum" is the best way to support teachers. The researcher concluded that administration support and encouragement is vital when teachers are implementing life skills and/or community-based instruction. Without support, teachers are less likely to take a risk and implement this type of learning into their classroom.

The district also plays a major role in life skills and community-based instruction. As the parent and many educators pointed out the district needs to start providing resources so teachers are able to incorporate this type of learning into their classroom. These resources include money, materials and

lessons as well as support and encouragement. Conclusions were made, based on the research, that if a school district supports and encourages life skills and community-based instruction in elementary school, students will be better prepared for high school, thus leading to better job opportunities upon graduation.

There are not just educational implications, but implications for the life of parents and students. As one educator noted community-based learning is important because the child "is [on] MC (modified curriculum), but the real world is not. They are not going to have a self-contained workplace (Interview, participant 5)." When students are explicitly taught life skills at school, these skillscan transfer to home life and help to make life easier for the parents. Life skills help to make a child more independent, taking some stress off parents to provide everything for a child with special needs (Interview, Participant 3). The biggest implication of life skills and community-based education at the elementary level is on the students themselves. This type of learning not only can lead to better outcomes in life, but an increase in self-confidence, independence, social skills as well as academic skills.

This study has shown that elementary self-contained special education classrooms need to incorporate life skills instruction as well as community-based learning into the curriculum. It is more than just one lesson on health or a field trip to a park. It needs to be part of the daily lessons and educational experiences of students. IEP goals can be written to incorporate life skills.

After completing this entire process, the researcher has a few suggestions for changes to practices in special education. The first suggestion is that there needs to be more funding for the types of learning recommended. To do this the district could create a position that is used to acquire grants, so teachers can take their students out into the community (Interview, participant 7). These grants also could help teachers get valuable resources like cooking supplies, life staples (like laundry detergent, dish soap, toothbrushes etc.) to be able to work on life skills in the classroom.

A packet about teaching life skills at home would be another step to assist students in acquiring these skills. "Sometimes we just assume that life skills are taught at home [and] that parents do a really great job with this, but it's not always the case (Interview, participant 9)." When parents can support and further practice skills at home, that are being worked on in the classroom, the student is more likely to remember the skill and be successful. A packet that has different activities a child can do at home such as putting on their pajamas, picking out five items from a list at the grocery store or setting the table, could help parents to understand and teach life skills at home.

However, all of this would be complicated without training on incorporating life skills and community-based instruction. Self-contained special education teachers should receive training on the importance of these skills as well as how to incorporate them into lessons while still teaching the state curriculum. Administrators also need to be trained about the significance of their teachers using these types of learning methods and how best to support and encourage them to do so. This will bring greater awareness to educators and spark them into including life skills and community-based education into their classrooms. "Bringing awareness to district administrators, building administrators and teachers to even think about this is important, and how do we do it (Interview, participant

6)," is the first step according to every participant interviewed. This recommendation is true. Teachers who are implementing this type of learning into their classroom need to be vocal in inviting administrators into their rooms to see it in action. As one administrator recommended, schools need to do a better job of "inviting district personnel to our school to see it in action and sharing what those practices are that are going on in our classrooms and how important they are (Interview, participant 9)." Overall, the biggest recommendation that can be made is to bring more awareness to the importance of incorporating life skills and community-based instruction into elementary self-contained special education classrooms. This will start the conversation and can lead to trainings, additional resources and support from many different stakeholders.

Summary

"I need pickles, lettuce and tomato please," stated the 6-year-old student while he ordered a sandwich at a grocery store. That may seem like a simple statement, but for a student with communication needs and an intellectual disability it took months of specific instruction in those life skills. After practicing in many different settings at school, that child was able to practice in a real-world situation out in the community. This child will grow up to be an adult. He will need to be able to express himself in different situations and have the social, communication and independent functioning skills to do so. This is what education is about, preparing students for life after school. Incorporating life skills instruction into elementary special education classrooms helps to set the foundation for students as they progress through school. Community-based learning allows students to generalize the skills learned in the classroom and understand the importance of those skills in a hands-on and practical way. That 6-year-old will grow up and know how to follow a shopping list, order food for himself and communicate with others, because he was taught that starting at a young age. He will not need to rely on others to do everything for him and hopefully will still feel the excitement he had when he ordered that sub by himself for the very first time.

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Correspondence concerning this article should be addressed to Kristyn Stetson. E-mail: kstetson0521@gmail.com

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